**Special Provisions**

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**STSP’S Revised November 21, 2019**

**SPECIAL PROVISIONS**

1. General.

Perform the work under this construction contract for Project Washington Avenue, City of Racine from Roosevelt Avenue to West Boulevard, STH 20, Racine County, Wisconsin as the plans show and execute the work as specified in the State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, 2020 Edition, as published by the department, and these special provisions.

If all or a portion of the plans and special provisions are developed in the SI metric system and the schedule of prices is developed in the US standard measure system, the department will pay for the work as bid in the US standard system.

100-005 (20191121)

1. Scope of Work.

The work under this contract shall consist of pavement removal, grading, concrete pavement, concrete curb and gutter, sidewalk, storm sewer laterals, decorative and standard street lighting, permanent and temporary traffic signals, permanent signing, landscape and streetscape, and pavement marking and all incidental items necessary to complete the work as shown on the plans and included in the proposal and contract.

104-005 (20090901)

1. Prosecution and Progress.

Begin work within ten calendar days after the engineer issues a written notice to do so.

Provide the start date to the engineer in writing within a month after executing the contract but at least 14 calendar days before the preconstruction conference. Upon approval, the engineer will issue the notice to proceed within ten calendar days before the approved start date.

To revise the start date, submit a written request to the engineer at least two weeks before the intended start date. The engineer will approve or deny that request based on the conditions cited in the request and its effect on the department’s scheduled resources.

Conform to the schedule of operations for the construction staging as shown in the plan. Do not move operations within the proposed construction staging unless modifications to the staging and schedule are approved in writing by the engineer.

**Contractor Coordination**

Have a superintendent or designated representative for the prime contractor on the job site during all work operations, including periods limited to only subcontractor work operations, to serve as a primary contact person and to coordinate all work operations.

Conduct and attend weekly scheduling meetings to discuss the near-term schedule activities, address any long-term schedule issues, and discuss any relevant technical issues. Develop a rolling three-week schedule identifying the previous week worked and a two week “look ahead.” Provide sufficient detail to include actual and planned activities and all the subcontractors for offsite and construction activities, addressing all activities to be performed and identifying issues requiring engineering action or input. The contractor’s superintendent or representative and designated materials representative shall attend. Subcontractors shall be in attendance at the weekly progress meetings if identified on the two week "look ahead."

Agenda items at the meeting shall include, but not be limited to, the following:

* Review of the contractor’s and subcontractors’ schedule. Indicate if the project is on, ahead or behind schedule. If behind indicate why, how much behind and how the project will get back on schedule.
* Utility conflicts and relocation schedule.
* Evaluation of progress to date.
* Outstanding Requests for Information (RFIs) or issues that may cause contract modifications.
* Shop drawing submittal status.
* Materials submittal status.
* Materials sampling and testing activities and results.
* Closure/detour schedules.
* Impacts to businesses and private properties.
* Impacts to bus routes, emergency services, postal services.
* Equipment status of orders and deliveries.

Based on the weekly progress meeting, if the engineer requests a new revised schedule, submit it according to subsection 108.4 of the standard specifications. Failure to submit a revised schedule shall result in the engineer holding pay requests according to subsection 108.4 of the standard specifications.

Do not close consecutive side streets at the same time without prior approval of the engineer. Coordinate side street closure with the City of Racine. Contact John C. Rooney, City Engineer at (262) 636-9460.

Do not proceed to a following construction stage until all work in the current stage is completed, including, but not limited to, temporary pavement, concrete pavement, pertinent signing, and all required traffic control devices and temporary and/or permanent pavement marking.

Do not remove from service residential or commercial driveways without sufficient notice given to tenants and/or property owners. Sufficient notice is defined as contacting 48 hours prior to removing a driveway from service. Work on the approach of driveways that are wider than 20 feet shall be staged to maintain access to the residential or commercial properties that have only one access. Close only one driveway at a time on the properties that have multiple driveways. If the contractor wishes to make other arrangements regarding driveway maintenance, these arrangements shall be agreed to in writing and signed by the prime contractor and property owner of the affected driveway. Provide a copy of the signed written agreement to the engineer.

The contractor is advised that there may be multiple mobilizations for such items as traffic control, temporary pavement marking, pavement marking, erosion control, topsoil, asphaltic surface temporary, lighting, seeding/sodding, mulching, fertilizer, drainage items, clearing and grubbing, and other incidental items related to staging required to complete the work under this contract. No additional payment will be made by the department for said mobilizations.

Comply with all local ordinances that apply to work operations, including those pertaining to working during nighttime work hours. Any ordinance variance issued by the municipality or required permits shall be furnished to the engineer, by the contractor, in writing three working days before performing such work.

Submit all traffic control change requests to the engineer at least seven days prior to an actual traffic control change. A request does not constitute approval. Provide 14-day look ahead schedule to the engineer.

Provide the Erosion Control Implementation Plan (ECIP) 14 days prior to the Pre‑Construction Conference.

Contact the United States Postal Service postmaster one week prior to beginning construction operations. Contractor shall provide, as needed, temporary mail boxes for residents and businesses within the project corridor. Coordinate with Mr. Mario K. Ambrose, Postmaster, United States Postal Service, Racine County at 1-800-275-8777. Cost of providing temporary mail boxes is incidental to the project.

The contractor is advised that some trees, signs, fences, retaining walls within the Temporary Limited Easement (TLE) shown on the plans are to remain, do not remove them without the approval of the engineer and without contacting the property owner.

Follow the construction detail included on the plan for excavation in front of the utility poles located within 2 feet from back of proposed curb and gutter.

Pedestrian access to businesses within West Racine (Blaine Avenue to West Boulevard) must be maintained during business hours.

Height and width of stockpiled construction material within the project limits shall be approved by the engineer.

Maintain existing lighting on north side of Washington Avenue during Stage 1 construction. Use new lighting constructed in Stage 1 for lighting during Stage 2 construction.

Provide Concrete Pavement HES at locations designated on the plans.

Construct curb ramp and driveway according to the information provided on the plans. Some curb ramps and driveways may not meet the current Standard Detail Drawing (SDD) standard.

Submit shop drawings for signal poles and arms to the engineer within five calendar days after executing the contract. Order signal poles and arms within two business days after engineer’s approval.

**Interim Completion of Work**

Complete construction operations on Washington Avenue (STH 20) with the exception of the landscape planting surveillance and care cycles prior to 12:01 A.M., Tuesday, November 30, 2021.

If the contractor fails to complete all contract works with the exception of the landscape planting surveillance and care cycles prior to 12:01 A.M., Tuesday, November 30, 2021, the department will assess the contractor $1,875 in interim liquidated damages for each calendar day that this work remains incomplete after 12:01 AM, Tuesday, November 30, 2021. An entire calendar day will be charged for any period of time within a calendar day that the work remains incomplete beyond 12:01 A.M.

1. Traffic.

**General**

Keep Washington Avenue (STH 20), on which this project is located, open to through vehicular traffic throughout the project length. Conduct construction operations in a manner that will cause the least interference to traffic movements, business, and residential access adjacent and within the construction areas.

The construction sequence, including the associated traffic control, shall be substantially accomplished as detailed in the Traffic Control Plans, and as described herein.

Utilize flaggers, signs, barricades, and drums as may be necessary to safeguard and direct traffic at all locations where construction operations may interfere with or restrict the smooth flow of traffic.

Do not park or store equipment, vehicles or construction materials within the clear zone (2 feet from the face of curb) on any roadway carrying traffic during non‑working hours except at locations and periods of time approved by the engineer.

Maintain emergency vehicular access at all times to all roadways located along Washington Avenue (STH 20).

**Pre-Stage 1:**

Reduce eastbound Washington Avenue traffic to one lane within the limits of proposed temporary pavement construction. Reduce eastbound and westbound Washington Avenue traffic to one lane from West Boulevard to Deane Boulevard.

Construct temporary pavement west of Roosevelt Avenue, at Ohio Street intersection, and between West Boulevard and Deane Boulevard.

**Stage 1, 1A, and 1B:**

Eastbound Washington Avenue traffic will use the existing westbound lane. Maintain one 11-foot travel lane in each direction and a two-way-left-turn-lane (TWLTL) from Sycamore Avenue to Ohio Street. Maintain one 11-foot travel lane in eastbound direction on existing westbound lanes from Ohio Street to West Boulevard. Detour westbound Washington Avenue traffic as shown in the detour plans. Prior to closing westbound Washington Avenue from West Boulevard to Ohio Street implement the detour route as shown on the plans. Maintain local access on Washington Avenue at all times or as directed by the engineer.

Close alternate side streets on southside of Washington Avenue to through traffic as shown on the plans during Stage 1. Open to traffic all side streets that were closed during Stage 1 during Stages 1A and 1B. Sequence side road construction as shown on the plan or as directed by the engineer.

Stage construction operations at Ohio Street and West Boulevard intersections to maintain all movements on a paved surface.

Move eastbound traffic to eastbound lanes west of Sycamore Avenue.

Construct pavement, curb and gutter, sidewalk, street lighting, traffic signal, and storm sewer laterals and structures on eastbound side of Washington Avenue from Roosevelt Avenue to Deane Boulevard.

Construct any median side curb and gutters that will not conflict with traffic control in Stages 2 and 3.

Detour pedestrians on Ohio Street as shown on the plan. Maintain pedestrian accommodation on one side of Washington Avenue at all times.

Detour West Boulevard during Stage 1A as shown on West Boulevard detour plan.

Detour northbound West Boulevard during string lining and paving operations for a maximum of three consecutive days during Stage 1. Pave northbound lanes.

Stage 1A: Construct westbound lanes of Washington Avenue from West Boulevard to 12th Street and southbound lanes of Ohio Street within the project limits.

Stage 1B: Construct eastbound lanes of Washington Avenue from West Boulevard to Deane Boulevard, northbound lanes of West Boulevard within the project limits, and southbound lanes of 12th Street as shown on the plan.

Detour southbound West Boulevard during string lining and paving operations for a maximum of three consecutive days during Stage 1B. Pave southbound lanes.

**Stage 2 and 2A:**

Westbound Washington Avenue traffic will use new pavement on eastbound side of Washington Avenue. Maintain one 11-foot travel lane in each direction from Roosevelt Avenue to Ohio Street.

Close alternate side streets on northside of Washington Avenue to through traffic as shown on the plans during Stage 2. Open to traffic all side streets that were closed during Stage 2 during Stage 2A. Sequence side road construction as shown on the plan or as directed by the engineer.

Move westbound traffic to westbound lanes west of Sycamore Avenue.

Construct pavement, curb and gutter, sidewalk, street lighting, traffic signal, and storm sewer laterals and structures on westbound side of Washington Avenue from Roosevelt Avenue to Deane Boulevard.

Construct any median side curb and gutters that will not conflict with traffic control in Stages 2 and 3.

Stage 2A: Construct eastbound lanes at the middle of Ohio Street intersection.

**Stage 3:**

Move westbound Washington Avenue traffic to new pavement on westbound side of Washington Avenue. Maintain one travel lane in each direction from Sycamore Avenue to Ohio Street. Open all travel lanes to traffic from Illinois Street to Deane Boulevard.

Construct pavement, curb and gutter, median, and storm sewer laterals and structures within median area along Washington Avenue from Sycamore Avenue to Ohio Street.

Perform traffic control in accordance with the plans and standard detail drawings.

**Wisconsin Lane Closure System Advance Notification**

Provide the following advance notification to the engineer for incorporation into the Wisconsin Lane Closure System (LCS).

**TABLE 108-1 CLOSURE TYPE AND REQUIRED MINIMUM ADVANCE NOTIFICATION**

|  |  |
| --- | --- |
| **Closure type with height, weight, or width restrictions (available width, all lanes in one direction < 16’)** | **MINIMUM NOTIFICATION** |
| Lane and shoulder closures | 7 calendar days |
| Full roadway closures | 7 calendar days |
| Ramp closures | 7 calendar days |
| Detours | 7 calendar days |
| **Closure type without height, weight, or width restrictions (available width, all lanes in one direction ≥16’)** | **MINIMUM NOTIFICATION** |
| Lane and shoulder closures | 3 business days |
| Ramp closures | 3 business days |
| Modifying all closure types | 3 business days |

Discuss LCS completion dates and provide changes in the schedule to the engineer at weekly project meetings in order to manage closures nearing their completion date.

1. Holiday Work Restrictions.

Do not perform work on, nor haul materials of any kind along or across any portion of the highway carrying Washington Avenue (STH 20) traffic, and entirely clear the traveled way and shoulders of such portions of the highway of equipment, barricades, signs, lights, and any other material that might impede the free flow of traffic during the following holiday periods:

- From noon Friday, May 28, 2021 to 6:00 A.M., Tuesday, June 1, 2021 for Memorial Day;

- From noon Friday, July 2, 2021 to 6:00 A.M., Tuesday, July 6, 2021 for Independence Day;

- From noon Friday, September 3, 2021 to 6:00 A.M., Tuesday, September 7, 2021 for Labor Day;

- From noon Wednesday, November 24, 2021 to 6:00 A.M., Monday, November 29, 2020 for Thanksgiving;

- From noon Thursday, December 23, 2021 to 6:00 A.M., Monday, January 3, 2021 for Christmas and New Year.

stp-107-005 (20181119)

1. Utilities.

This contract does not come under the provision of Administrative Rule Trans 220.

stp-107-066 (20080501)

There are underground or overhead utility facilities within three feet of the proposed concrete curb and gutter.

Additional information regarding recently relocated utility facilities may be available on permits issued to the utility companies. These permits can be viewed at the City Hall, City of Racine during normal working hours. Contact the Utility Coordinator Denise Rosenthal at (262) 548-8733 for further information.

Underground and overhead utility facilities are located within the project limits. Utility adjustments are required for this construction project as noted below. Coordinate construction activities with a call to Diggers Hotline or a direct call to the utilities that have facilities in the area as required per statutes. Use caution to ensure the integrity of underground facilities and maintain code clearances from overhead facilities at all times.

Some of the utility work described below is dependent on prior work being performed by the contractor at a specific site. In such situations, provide the engineer and the affected utility a good faith notice of when the utility is to start work at the site. Provide this notice 14 to 16 calendar days in advance of when the prior work will be completed, and the site will be available to the utility. Follow-up with a confirmation notice to the engineer and the utility not less than 3 working days before the site will be ready for the utility to begin its work.

Contact each utility company listed in the plans, prior to preparing bids, to obtain current information on the status of existing and any new utility relocation work.

Known utilities in the project are as follows:

**AT&T Wisconsin** has underground and overhead communication facilities within the project limits.

AT&T does not foresee any need for relocation.

Note: Street lighting will cross AT&T facilities at approximately stations 106+15 RT, 108+00 LT, 112+15 RT, 117+20 RT, and will parallel AT&T cable from approximately 117+20 LT to 118+50 LT. Please use caution.

Manhole frame and covers at approximately stations 101+40, 107+75, 113+55, and 120+40 will require coordinated adjustment to match road grade.

Manhole and frame and cover adjustments will be completed by Telcom Construction on behalf of AT&T. Frame and cover adjustments are anticipated to be completed within one working day per location. Three days of advance notification is required to start the adjustments.

Field contact: Scott Sokolowski @ 414-258-5239 for coordination during construction.

**Charter Communications** has underground and overhead communication facilities within the project limits.

Charter will transfer their facilities to new WE Energies poles as needed. Charter intends to complete their relocation within 60 working days prior to construction providing the following conditions can be met:

WE Energies places new poles as described in the preliminary sketch provided to Charter.

Field Contact: Neal Long, (414) 27-4271, neal.long@charter.com

**City of Racine Sewer** has underground sanitary sewer facilities within the project limits.

Sanitary sewer manhole cover adjustment will be done as a part of the project during construction to bring existing castings up to finished grade.

Field Contact: Allen Boruch, (262) 636-9483, allen.boruch@cityofracine.org

**Racine Wastewater** has interceptor sewers along the entire length of the project.

Relocation or replacement of manholes and mainline sewers is not anticipated. Manhole field adjustments will be done as a part of the project during construction to meet new pavement grades.

Field Contact: Keith Haas, (262) 636-9434, keith.haas@cityofracine.org

**Midwest Fiber Networks (MWFN)** has aerial and underground facilities throughout sections of the project. MWFN anticipates no UG relocations at this time but it appears there will be impacts to We Energies' (WE) poles which MWFN FO cable is attached. MWFN has not received WE's proposed design and once received a plan will need to be created. If just pole transfers to new poles are needed, WE and any other attacher above MWFN will need to complete their work prior to starting MWFN's relocation. If new poles are not set by WE then MWFN will need to create an UG relocation plan.

WE's design has not been received. If WE's poles are impacted MWFN will need adequate time to complete our relocation plan

Field Contact: Richard Trgovec, (414) 459-3554, rtrgovec@midwestfibernetworks.com

**Racine Water Works Commission** has underground water main along the entire length of the project.

Water main replacement from station 98+60 to station 171+40 will be completed by the City of Racine prior to construction within 90 working days. Anticipated start date is July 2020.

Field Contact: Chad Regalia, (262) 497-4611, chad.regalia@cityofracine.org

**WE Energies-Electric** has underground and overhead electric facilities parallel to and across STH 20 within the project limits.

Work to be completed prior to construction:

We Energies Electric anticipates completing relocation within 100 working days. Anticipated start date is November 2020. Relocations and adjustments of We Energies electric facilities will be constructed as indicated on the following list for poles and anchors (WR 4363652). Highway stationing has been used where possible to locate existing and new facilities.

|  |  |  |  |
| --- | --- | --- | --- |
| ApproximateStation No. | Sequence No. | Pole No. | Work Proposed |
| 98+61.5, 39’ LT | 105 | 69-24359 | Remove pole and double circuit framing. |
| 99+58.9, 39’ LT | 115 | 54-2895 | Remove pole and double circuit framing. |
| 101+81.2, 39’ LT | 135 | E63-8694 | Remove pole and double circuit framing. |
| 102+91.9, 39’ LT | 145 | E63-8693 | Remove pole and double circuit framing. |
| 104+20.2, 39’ LT | 155 | E63-8689 | Remove pole and double circuit framing. |
| 105+22.7, 38’ LT | 165 | E64-15850 | Remove pole and guying. |
| 106+21.6, 38’ LT | 175 | E64-15849 | Remove pole, framing. |
| 104+30.0, 131’ LT | 185 | 48-585 | Remove pole and guying. |
| 106+18.3, 125’ LT | 177 | E59-15586 | Remove pole and transformer. |
| 106+13.8, 269’ LT | 179 | E59-16586 | Remove pole. |
| 106+58.0, 38’ LT | 195 | --- | Remove guy pole. |
| 104+88.1, 70’ RT | 205 | 63-8696 | Remove pole and transformer. |
| 106+21.0, 58’ RT | 225 | E63-8687 | Remove guy pole. |
| 104+90.0, 147’ RT | 215 | E63-8701 | Remove pole and transformer. |
| 99+91.6, 63’ RT | 235 | 00-30247 | Remove guy pole. |
| 114+02.0, 90’ LT | 245 | 61-4398 | Remove pole and transformer. |
| 114+03.3, 191’ LT | 255 | 62-4223 | Remove pole. |
| 113+94.2, 76’ RT | 265 | 97-08511 | Remove pole. |
| 113+89.2, 166’ RT | 275 | 61-4400 | Remove pole and transformer. |
| 140+47.6, 39’ LT | 285 | 49-4414 | Remove pole. |
| 140+50.0, 67’ RT | 295 | 49-4359 | Remove pole. |
| 140+50.0, 149’ RT | 305 | 36-3395 | Remove pole and double circuit framing. |
| 140+47.4, 169’ LT | 315 | 49-4368 | Remove corner pole. |
| 166+43.7, 59’ LT | 325 | 92-18339 | Remove pole and double circuit framing. |
| 166+31.2, 149’ LT | 335 | 55-5119 | Remove guy pole. |
| 167+44.6, 135’ RT | 345 | 72-0312 | Remove pole and double circuit framing. |
|  |  |  |  |
| 98+59.6, 39’ LT | 100 | 20\_\_1 | Install new pole, double circuit framing. |
| 99+56.9, 39’ LT | 110 | 20\_\_2 | Install new pole, double circuit framing. |
| 101+89.2, 39’ LT | 130 | 20\_\_3 | Install new pole, double circuit framing. |
| 102+91.9, 39’ LT | 140 | 20\_\_4 | Install new pole, double circuit framing. |
| 104+23.7, 39’ LT | 150 | 20\_\_5 | Install new pole, double circuit framing, pole guy. |
| 105+20.7, 38’ LT | 160 | 20\_\_6 | Install new pole, guying. |
| 106+23.6, 38’ LT | 170 | 20\_\_7 | Install new pole, pole guy. |
| 106+19.0, 133’ LT | 176 | 20\_\_8 | Install new pole, transformer. |
| 106+15.0, 266’ LT | 178 | 20\_\_9 | Install new pole. |
| 104+30.0, 128’ LT | 180 | 20\_\_10 | Install new guy pole. |
| 106+55.0, 38’ LT | 190 | 20\_\_11 | Install new guy pole. |
| 104+86.2, 94’ RT | 200 | 20\_\_12 | Install new pole, double circuit framing, & transformer. |
| 104+90.0, 152’ RT | 210 | 20\_\_13 | Install new pole, double circuit framing, & transformer. |
| 106+23.0, 58’ RT | 220 | 20\_\_14 | Install new pole, pole guy. |
| 99+62.0, 69’ RT | 230 | 20\_\_15 | Install new pole, pole guy. |
| 114+04.0, 92’ LT | 240 | 20\_\_16 | Install new pole, transformer. |
| 114+05.3, 189’ LT | 250 | 20\_\_17 | Install new pole, guying. |
| 113+93.8, 84’ RT | 260 | 20\_\_18 | Install new pole. |
| 113+88.2, 163’ RT | 270 | 20\_\_19 | Install new pole, transformer. |
| 140+47.6, 59’ LT | 280 | 20\_\_20 | Install new pole. |
| 140+50.0, 64’ RT | 290 | 20\_\_21 | Install new pole. |
| 140+48.0, 150’ RT | 300 | 20\_\_22 | Install new pole, double circuit framing. |
| 140+49.4, 167’ LT | 310 | 20\_\_23 | Install new pole. |
| 166+31.8, 70’ LT | 320 | 20\_\_24 | Install new pole, double circuit framing. |
| 166+22.4, 147’ LT | 330 | 20\_\_25 | Install new pole. |
| 167+34.7, 134’ RT | 340 | 20\_\_26 | Install new pole, double circuit framing. |
| 165+91.0, 80’ LT | 350 | 20\_\_27 | Install new guy pole. |

Work to be completed during construction:

New pole points 120, 160, 170, and 190 will need to be installed at time of construction due to being replaced partially in existing roadway. Please coordinate installation time of construction with We-Energies Brenda Gunnink (414) 944-5653 or John Miller (414) 944-5679.

The electric manholes listed below will be adjusted by We Energies crews only. A 10 day notice is required to make these adjustments. Manhole adjustments will be completed within two working days per manhole by We-Energies crews or a contractor designated by We-Energies. The contact is
Zach St Martin at 414-540-5782 (office) or 414-858-6284 (cell).

* MH74-292, Approx. STA 165+35 35’ LT
* MH812, Approx. STA 168+83 227’ LT
* MH811, Approx. STA 171+30 20’ LT

When proposed sewer construction starts, We-Energies will need three weeks notification before start time for cribbing/support. Cribbing/support will be needed at the following locations:

* Pole No. 02-22189, Approx. STA 100+92 39’ LT
* New pole at pt 150, Approx. STA 104+23.7 39’ LT
* Pole No. 55-5119, Approx. STA 166+68 156’ LT156’

Please contact Troy Nealey: 414-944-5547 or 414-322-4661 (cell) three weeks prior to storm sewer construction.

Field Contact: Troy Nealey, 414-944-5547 or 414-322-4661 (cell).

**WE Energies-Gas** has underground gas facilities parallel and across STH 20 within the project limits in the following locations:

Relocations and adjustments of We Energies facilities will be constructed prior to construction per the work requests: WR 4398370 and WR 4376623 (Completed ahead of Perry Ave water main project). We Energies Gas anticipates completing the relocations within 95 working days. Anticipated start data is August 2020.

Highway stationing has been used where possible to locate new facilities.

* Installing 4” P.E., 58’ RT from Stations 101+60 to 104+30. (WR 4376623).
* 4” P.E. main crossing Washington Avenue at Station 104+30 (WR 4376623).
* 4” ST installed 41’ LT from Stations 104+30 to 108+32. 4” P.E. will cross STH 20 at this location. (WR 4376623).

Work to be performed on WR # 4398370

* 4” P.E. will be installed 62’ RT from 108+32 to 112+00. 4” P.E. will vary from 62’ RT to 65’ RT from Stations 112+00 to 112+93.
* 4” P.E, will be installed from Stations 14+00 to 14+60. Main will be installed 50’ LT on Ohio Street.
* 4” P.E. will be installed from Stations 112+93 to 114+30. Main crosses Ohio street at an angle at approximate Station 14+60. Main will be approximately 35’ RT and tie in to the existing main at Station 114+30.
* 2” P.E. crossing STH 20 at Station 137+20. Main will be installed 39’ RT from Station 11+18 to 12+10.
* 10” steel main will be installed on Lathrop Ave from Station 12+84 to 14+66, 15’ LT.
* 4” P.E. main crossing Lathrop Ave at approximate station 14+20. Main will tie into our newly installed 10” steel 15’ LT on Lathrop Avenue and head east on Washington Avenue from Station 140 +09 to 146+50, approximately 19' LT. 4” p. e. main will offset to 23’ LT from Station 146+20 to 146+85, to avoid proposed storm M.H. # 29.0. 4” p. e. main will continue east on Washington Avenue from Station 146+85 to Station 157+25 approximately 19’ LT. At Station 157+25 main will offset to 21’ LT to Station 160+00 (to avoid storm structure 35.1). At Station 160+00, main will offset back to approximately 19’ LT until station 165+40 where it terminates.
* 4” P.E. will be installed 32’ RT on Washington Avenue from Station 139+70 to 140+08. (Ties into the proposed 10” steel).
* 2” P.E. main crossing Washington Avenue near West Lawn Avenue at Station 147+18 from Station 11+10 to 12+10, 27’ LT. 2” P.E. main crosses West Lawn Avenue at Station 12+10.
* 2” P.E. main will be installed on Cleveland Avenue from Station 11+64 to 12+10 28’ LT where it ties into the existing main.
* 2” P.E. main will be installed on Arthur Avenue from Station 11+65 to 12+05, 28’ LT. where it ties into the existing main.
* 4” P.E. main installed 13’ LT on Blaine Avenue from Station 11+69 to 12+20, where it ties into our existing main 9’ LT.
* 4” P.E. installed from Station 11+00 to 11+69, 23’ LT. Main ties into our existing main at approximate Station 10+85, and crosses Washington Avenue at Station 156+81.
* 2” P.E. installed on Grove Avenue from Station 11+68 to 12+42, 25’ LT.

The proposed 15” storm sewer from proposed structure 8.3 to 8.0 crosses a 16” 300 p.s.i. steel gas main. Storm sewer pipes from structure 8.3 to 8.4 and 12.2 to 8.0 also cross this 16”, 300 p.s.i. main. Proposed Storm structure 8.4 is very close to our 16” 300 p.s.i. main. This main was installed in 2014 and due the complexity and expense We Energies will not be relocating it. It is believed to be under the proposed storm work. Extreme care must be used installing the proposed storm sewers and structures. When the contractor is working within 5 feet of the 16” main on Ohio Street and 10” facilities on Lathrop Avenue the contractor should have a watchdog which is provided by We-Energies. When locates are called in the contractor should contact We Energies and We Energies will provide a watch-dog.

We Energies will require 10 days’ notice from WisDOT’s contractor to schedule the removal of the gas main. We Energies will work along with the road reconstruction contractors at the time of construction to dispose of any steel pipe, which is coated with coal tar wrap that contains asbestos fibers, where the pipe is in conflict with grading or storm sewer work. Potential conflicts with grading Station 15+50 to 16+00 and potential conflict with storm structure 8.0 and 8.4. This work will take approximately five days to complete.

We Energies plans to relocate its facilities prior to construction.

Following We Energies Gas facilities are no longer is use and have been left in place:

* 16” ST on Ohio St. from Station 14+00 to 17+00 approx. 36’ LT
* 4” steel main from Station 101+50 to 114+50, main is under the east bound lane, varying from 18’ to 29’ RT.
* 4” p.e. from Station 116+50 to 117+50, 30’ RT
* 2” p.e. on Virginia Street from Station 11+18 to 12+10. Main crosses Washington Avenue at Station 117+12.
* 4” p.e. from Station 119+72 to 120+65, 29’ RT
* 2” p.e. on Illinois Street from Station 11+00 to 12+35, 20’ RT, crosses Washington Avenue at Station 120+00
* 4” p.e. from Station 126+57 to 127+33, 31’ RT.
* 2” p.e. on Indiana Street from 11+20 to 12+31, 26’ RT. Crosses Washington Avenue at Station 127+21
* 2” p.e. on Russet Street from Station 11+20 to 12+02, 27’ LT and crossing Washington Avenue at Station 136+05
* 6” st main crossing Lathrop Avenue at Station 14+56.
* 6” st main on Washington Avenue from Station 140+50 to 165+40, Approximately 15’ LT.
* 2” P.E. main crossing Washington Avenue at Station 147+12 and crossing West Lawn Avenue at Station 12+11.
* 2” p.e. on Cleveland Avenue from Station 11+64 to 12+02, 20’ LT.
* 2” p.e. on Arthur Avenue from Station 11+68 to 12+00, 20’ LT.
* 4’ steel main on Blaine Avenue from Station 10+85 to 12+10, 14’ LT and crosses Washington Avenue at Station 14+85.
* 2” p.e. on Grove Avenue from Station 11+85 to 12+50 , 17’ LT.

Field Contact: Chris DeGrave, (262) 886-7018, (262) 939-9814 (Mobile).

**City of Racine** has street lighting facilities within the project limits.

Street lights will be replaced by the contractor as a part of the project.

Field Contact: John Rooney, (262) 636-9460.

1. Information to Bidders, WPDES General Construction Storm Water Discharge Permit.

The department has obtained coverage through the Wisconsin Department of Natural Resources to discharge storm water associated with land disturbing construction activities of this contract under the Wisconsin Pollutant Discharge Elimination System General Construction Storm Water Discharge Permit (WPDES Permit No. WI-S066796-1). A certificate of permit coverage is available from the regional office by contacting Robert Bellin, P.E. at (262) 521-4405. Post the permit in a conspicuous place at the construction site.

stp-107-056 (20180628)

1. Health and Safety Requirements for Workers Remediating Petroleum Contamination.

*Add the following to standard spec 107.1(2):*

Soil contamination with gasoline, diesel fuel, fuel oil, or other petroleum related products may be encountered during excavation activities. Prepare a site specific Health and Safety Plan complying with the Occupational Safety and Health Administration (OSHA) standard for Hazardous Waste Operation and Emergency Response (HAZWOPER), 29 CFR 1910.120.

All site workers taking part in remediation activities or who will have the reasonable probability of exposure of safety or health hazards associated with the hazardous material shall have completed Health and Safety training that meets OSHA requirements. Before the start of remediation work, submit to the engineer a site specific Health and Safety Plan, and written verification that workers will have completed up-to-date OSHA training.

Develop, delineate, and enforce the health and safety exclusions zones for each contaminated site location pursuant to 29 CFR 1910.120.

stp-107-115 (20150630)

1. Material Stockpile and Equipment Storage

Submit a map showing all proposed material stockpile and equipment storage locations to the engineer 14 calendar days before either the preconstruction conference or proposed use, whichever comes first. Identify the purpose; length, width and height; and duration of material stockpile or equipment storage at each location. Obtain written permission and necessary permits from the property owner and local governments/agencies and submit two copies to the engineer. Do not stockpile material or store equipment until the engineer approves.

Material stockpiles and equipment storage on STH 20 Eastbound and Westbound between Station 98+60 and Station 171+40 is limited to a height of five feet and 14 calendar days unless the engineer approves otherwise in writing.

Material stockpiles and equipment storage on Roosevelt Avenue, Perry Avenue, Ohio Street, Virginia Street, Illinois Street, Oregon Street, Indiana Street, Kentucky Street, Orchard Street, Russet Street, Lathrop Avenue, Monroe Avenue, West Lawn Avenue, Cleveland Avenue, Arthur Avenue, Blaine Avenue, Hayes Avenue, Grove Avenue, and West Boulevard is not allowed unless the engineer approves otherwise in writing.

Do not park or store equipment, vehicles, or construction materials within 6 feet of the edge of the STH 20 traffic lanes during non-working hours.

SER-107-011 (20181019)

1. Erosion Control.

The contractor shall prepare and submit an erosion control implementation plan (ECIP) for the project including borrow sites, material disposal sites, dust control, and dewatering according to Chapter TRANS 401 requirements. The erosion control implementation plan shall supplement information shown on the plans and shall not reproduce it. The erosion control implementation plan will identify how the contractor intends to implement the project’s erosion control plan.

*Supplement section 107.20 pf the standard specifications with the following:*

Provide the ECIP 14 calendar days prior to the pre-construction conference. Provide 1 copy of the ECIP to WisDOT and 1 copy of the ECIP to the WDNR Liaison (Kristina Betzold, 2300 N. Dr. Martin Luther King Jr. Dr., Milwaukee, WI 53212, Tel: (414) 263-8517, Email: Kristina.Betzold@Wisconsin.gov). Pursue operations in a timely and diligent manner, continuing all construction operations methodically from the initial removals and topsoil stripping operations through the subsequent grading, paving, and re-topsoiling to minimize the period of exposure to possible erosion. Do not implement the ECIP until it has been approved by the department.

Re-topsoil graded areas, as designated by the engineer, immediately after grading is completed within those areas. Seed, fertilizer, and mulch, as designated by the engineer, within 7 calendar days after placement of topsoil. If graded areas are left exposed for more than 14 calendar days, seed those areas with temporary seed and mulch. When performing roadway cleaning operations, the contractor shall use equipment having vacuum or water spray mechanism to eliminate the dispersion of dust. If vacuum equipment is employed, it shall have suitable self-contained particulate collectors to prevent discharge from the collection bin into the atmosphere.

Stockpile excess material or spoils on upland areas away from wetlands, floodplains and waterways. Stockpiled soil shall be protected against erosion. If stockpiled material is left for more than 14 calendar days, seed the stockpile with temporary seed and mulch.

Do not pump water from the construction site to a storm water conveyance without the water first passing through a sediment trap or filter bag.

1. Public Convenience and Safety.

*Revise standard spec 107.8(6) as follows:*

Check for and comply with local ordinances governing the hours of operation of construction equipment. Do not operate motorized construction equipment from 8:00 PM until the following 7:00 AM, unless prior written approval is obtained from the engineer.

stp-107-001 (20060512)

1. Notice to Contractor – RYDE (Racine Transit) Coordination.

The City of Racine’s RYDE transit service operates the following bus routes within the construction limits: Route 4 travels on Ohio Street south of Washington Avenue and along Washington Avenue from Ohio Street to east end of the project. Route 20 travels on Washington Avenue within the entire project length. Route 86 travels on Washington Avenue from beginning of the project to Ohio Street and Ohio Street north of Washington Avenue. Southbound Route 86 crosses Washington Avenue at Lathrop Avenue intersection. Route 30 travels on Washington Avenue with the project limits. Bus routes will be detoured as follows:

Route 4:

Eastbound: North on Ohio Street–East on Wright Avenue–East on Washington Avenue.

Westbound: West on Washington Avenue–South of Taylor Avenue–West on 16th Street–South on Ohio Street.

Bus Stops: RYDE will post “bus stop moved” notices on the existing bus stops along Washington Avenue and add any temporary bus stops along the detour route.

Route 20

Eastbound: Stay on Washington Avenue as there are no bus stops within the project limits.

Westbound: West on Washington Avenue–South of Taylor Avenue–West on 16th Street–North on Ohio Street–West on Washington Avenue.

Bus Stops: RYDE will post a “bus stop moved” notice on the existing bus stop at the northwest corner of the Washington Avenue and Ohio Street intersection and set up a temporary bus stop west of Roosevelt Avenue, between Roosevelt Avenue and Sycamore Avenue.

Route 30

Eastbound: Stay on Washington Avenue as there are no bus stops within the project limits.

Westbound: West on Washington Avenue–South on Taylor Avenue–West on 16th Street–North on Green Bay Road–West on Washington Avenue.

Route 86

Southbound (when Lathrop Avenue is open): West on Kinzie Avenue–South on Lathrop Avenue.

Southbound (when Lathrop Avenue is closed): West on Kinzie Avenue–South on Monroe Avenue–West on Wright Avenue–South on Lathrop Avenue.

Bus Stops: RYDE will post “bus stop moved” notices on the existing bus stops along Washington Avenue and will add any temporary bus stops along the detour route.

Contractor shall notify RYDE one week before opening and closing Lathrop Avenue and Monroe Avenue for construction operations. This will allow RYDE to accommodate the switch of the Route 86 bus line.

RYDE will add temporary bus stop signage to be used during construction.

Existing bus stop signs that are mounted on existing light poles or utility poles that will be removed or relocated as part of the project will be removed and mounted on new sign posts by the City of Racine Department of Public Works (DPW).

Notify RYDE at least ten (10) business days prior to beginning the work. The contractor shall manage bus stop signs and shelters that are within the project limits during construction. The RYDE will manage bus stop signs on the detour route.

Invite RYDE to all coordination meetings between the contractor, the department, local officials and business people to discuss the project schedule of operations including vehicular and pedestrian access during construction operations.

Contact Information:

Willie E. McDonald

General Manager

RYDE

1900 Kentucky Street

Racine, WI 53403

Phone: (262) 619-2443

Willie.McDonald@cityofracine.org

1. Notice to Contractor - Sign Removal

Contact Ara Molitor, City of Racine, at (262) 636-9487 at least five working days prior to the removal of existing signs within the project corridor.

The Department assumes that all signs are in good condition prior to the contractor’s removal operation. Prior to removal, inspect and provide a list of any damaged signs to the engineer.

Deliver removed signs to the traffic department located at 830 Racine Street, Racine WI 53403. Contact Ara Molitor at (262) 636-9487 at least five working days prior to delivery to make arrangements for delivery.

1. Notice to Contractor - HMOD 5

The HMOD 5, located at approximately Station 11+06 T, 61 feet Left should not be impacted by the construction. If the Contractor thinks that the HMOD 5 could be impacted by the construction operations, the Engineer shall be notified so that the HMOD can be tied off for relocation later.

1. Coordination with Businesses and Residents.

The department will arrange and conduct a meeting between the contractor, the department, affected residents, local officials and businesspeople to discuss the project schedule of operations including vehicular and pedestrian access during construction operations. Hold the first meeting at least one week before the start of work under this contract and hold one meeting per month thereafter. The department will arrange for a suitable location for meetings that provides reasonable accommodation for public involvement. The department will prepare and coordinate publication of the meeting notices and mailings for meetings. The contractor shall schedule meetings with at least two weeks prior notice to the engineer to allow for these notifications.

stp-108-060 (20141107)

1. Removing Street Light Poles, Item 204.9060.S.

A Description

This special provision describes removing Street Light Poles conforming to section 204 of the standard specifications.

B (Vacant)

C (Vacant)

Contact Ara Molitor, City of Racine, at (262) 636-9487 at least seven working days prior to the removal of the street light poles along Washington Avenue. The City may want to salvage the poles and fixtures. Deliver poles that the City would like to salvage to 1415 Hampden Place, Racine WI 53403. Contact Ara Molitor at (262) 636-9487 at least five working days prior to delivery to make arrangements for delivery.

D Measurement

The department will measure Removing Street Light Poles as each individual pole acceptably completed.

E Payment

*Add the following to standard spec 204.5:*

ITEM NUMBER DESCRIPTION UNIT

204.9060.S Removing Street Light Poles EACH

stp-204-025 (20150630)

1. Excavation, Hauling, and Disposal of Petroleum Contaminated Soil, Item 205.0501.S.

**A Description**

**A.1 General**

This special provision describes excavating, loading, hauling, and disposing of petroleum contaminated soil at a DNR approved bioremediation facility. The closest DNR approved bioremediation facilities are:

Republic Services Kestrel Hawk Landfill

1989 Oakes Rd.

Racine, WI 53406

(262) 884-7081

Waste Management Pheasant Run RDF Landfill

10712 South 124th Street

Bristol, WI 53104

(800) 963-4776

Advanced Disposal Emerald Park Landfill

W124S10629 South 124th Street

Muskego, WI 53150

(414) 529-1360

Perform this work in accordance to standard spec 205 and with pertinent parts of Chapters NR 700-754 of the Wisconsin Administrative Code, as supplemented herein. Per NR 718.07, a solid waste collection and transportation service-operating license is required under NR 502.06 for each vehicle used to transport contaminated soil.

**A.2 Notice to the Contractor – Contaminated Soil Locations**

The department completed testing for soil contamination at locations within this project where excavation is required.

Testing indicated that petroleum-contaminated soil is present at the following location as shown on the plans:

1. Station 105+80 to 109+00 from reference line to project limits left, from approximately 1 to 8+ feet below grade. The estimated volume of contaminated soil to be excavated at this location is 1,214 cubic yards (approximately 2,064 tons using a conversion factor of 1.7 tons per cubic yard).
2. Station 112+50 to 113+35 from project limits left to project limits right, from approximately 3 to 16+ feet below grade. The estimated volume of contaminated soil to be excavated at this location is 272 cubic yards (approximately 462 tons using a conversion factor of 1.7 tons per cubic yard).
3. Station 113+35 to 114+40 from project limits left to project limits right, from approximately 10+ feet below grade. The estimated volume of contaminated soil to be excavated at this location is 0 cubic yards (approximately 0 tons using a conversion factor of 1.7 tons per cubic yard).
4. Station 120+20 to 120+75 from reference line to project limits right, from approximately 1 to 6 feet below grade. The estimated volume of contaminated soil to be excavated at this location is 166 cubic yards (approximately 282 tons using a conversion factor of 1.7 tons per cubic yard).
5. Station 139+50 to 140+25 from reference line to 65 feet right of reference line, from approximately 2.5 to 16+ feet below grade. The estimated volume of contaminated soil to be excavated at this location is 71 cubic yards (approximately 121 tons using a conversion factor of 1.7 tons per cubic yard).
6. Station 140+25 to 141+00 from reference line to 55 feet left of reference line, from approximately 1 to 16+ feet below grade. The estimated volume of contaminated soil to be excavated at this location is 223 cubic yards (approximately 379 tons using a conversion factor of 1.7 tons per cubic yard).
7. Station 140+25 to 140+65 from 55 feet left of reference line to 80 feet left of reference line, from approximately 1 to 6 feet below grade. The estimated volume of contaminated soil to be excavated at this location is 19 cubic yards (approximately 32 tons using a conversion factor of 1.7 tons per cubic yard).
8. Station 156+30 to 157+00 from reference line to project limits left, from approximately 1 to 6 feet below grade. The estimated volume of contaminated soil to be excavated at this location is 253 cubic yards (approximately 430 tons using a conversion factor of 1.7 tons per cubic yard).
9. Station 157+00 to 157+85 from reference line to project limits left, from approximately 1 to 7+ feet below grade. The estimated volume of contaminated soil to be excavated at this location is 219 cubic yards (approximately 372 tons using a conversion factor of 1.7 tons per cubic yard).
10. Station 157+85 to 158+40 from reference line to project limits left, from approximately 1 to 6 feet below grade. The estimated volume of contaminated soil to be excavated at this location is 101 cubic yards (approximately 172 tons using a conversion factor of 1.7 tons per cubic yard).
11. Station 159+50 to 160+55 from reference line to project limits left, from approximately 1 to 6+ feet below grade. The estimated volume of contaminated soil to be excavated at this location is 370 cubic yards (approximately 629 tons using a conversion factor of 1.7 tons per cubic yard).
12. Station 160+25 to 160+55 from 30 feet right of reference line to 60 feet right of reference line, from approximately 3+ feet below grade. The estimated volume of contaminated soil to be excavated at this location is 15 cubic yards (approximately 26 tons using a conversion factor of 1.7 tons per cubic yard).
13. Station 162+45 to 162+75 from reference line to project limits left, from approximately 4+ feet below grade. The estimated volume of contaminated soil to be excavated at this location is 0 cubic yards (approximately 0 tons using a conversion factor of 1.7 tons per cubic yard).
14. Station 162+75 to 163+20 from reference line to project limits left, from approximately 1 to 6+ feet below grade. The estimated volume of contaminated soil to be excavated at this location is 66 cubic yards (approximately 112 tons using a conversion factor of 1.7 tons per cubic yard).

Directly load soil excavated by the project at the above locations into trucks that will transport the soil to a WDNR-licensed bioremediation facility.

If contaminated soils are encountered elsewhere on the project, terminate excavation activities in the area and notify the engineer.

No active groundwater monitoring wells were observed within the construction limits. If active groundwater monitoring wells are encountered during construction, notify the engineer and protect them to maintain their integrity. The environmental consultant will determine if monitoring wells need to be maintained. For monitoring wells that do need to be maintained, adjust the wells that do not conflict with structures or curb and gutter to be flush with the final grade. For wells that conflict with the previously mentioned items or if monitoring wells are not required to be maintained, they will be abandoned by others.

**A.3 Excavation Management Plan**

The excavation management plan for this project has been designed to minimize the offsite bioremediation of contaminated material. The excavation management plan, including these special provisions, has been developed in cooperation with the WDNR. The WDNR concurrence letter is on file at the Wisconsin Department of Transportation. For further information regarding previous investigation and remediation activities at these sites contact:

 Name: Andrew Malsom

 Address: 141 NW Barstow Street, PO Box 798, Waukesha, WI 53187-0798

 Phone: 262-548-6705

 Fax: 262-548-6891

 e-mail: **andrew.malsom@dot.wi.gov**

**A.4 Coordination**

Coordinate work under this contract with the environment consultant:

 Consultant: TRC Environmental Corporation

 Address: 150 N. Patrick Blvd., Ste. 180, Brookfield, WI 53045

 Contact: Bryan Bergmann

Phone: 262-901-2126 (office), 262-227-9210 (cell)

Fax: 262-879-1220

e-mail: **bbergmann@trcsolutions.com**

The role of the environmental consultant will be limited to:

1. Determining the location and limits of contaminated soil to be excavated based on soil analytical results from previous investigations, visual observations, and field screening of soil that is excavated;
2. Identifying contaminated soils to be hauled to the bioremediation facility;
3. Documenting that activities associated with management of contaminated soil are in conformance with the contaminated soil management methods for this project as specified herein; and
4. Obtaining the necessary approvals for disposal of contaminated soil from the bioremediation facility.

Provide at least a 14-calendar day notice of the preconstruction conference date to the environmental consultant. At the preconstruction conference, provide a schedule for all excavation activities in the areas of contamination to the environmental consultant. Also notify the environmental consultant at least three calendar days prior to commencement of excavation activities in the contaminated area.

Coordinate with the environmental consultant to ensure that the environmental consultant is present during excavation activities in the contaminated area. Perform excavation work in each of the contaminated areas on a continuous basis until excavation work is completed.

Identify the DNR approved bioremediation facility that will be used for disposal of contaminated soils, and provide this information to the environmental consultant no later than 30 calendar days prior to commencement of excavation activities in the contaminated areas or at the preconstruction conference, whichever comes first. The environmental consultant will be responsible for obtaining the necessary approvals for disposal of contaminated soils from the bioremediation facility. Do not transport contaminated soil offsite without prior approval from the environmental consultant.

**A.5 Health and Safety Requirements**

Add the following to subsection 107.1 of the standard specifications:

During excavation activities, expect to encounter soil contaminated with gasoline, diesel fuel, fuel oil, or other petroleum related products and metals. Site workers taking part in activities that will result in the reasonable probability of exposure to safety and health hazards associated with hazardous materials shall have completed health and safety training that meets the Occupational Safety and Health Administration (OSHA) requirements for Hazardous Waste Operations and Emergency Response (HAZWOPER), as provided in 29 CFR 1910.120.

Prepare a site-specific Health and Safety Plan, and develop, delineate and enforce the health and safety exclusion zones for each contaminated site location as required by 29 CFR 1910.120. Submit the site-specific health and safety plan and written documentation of up-to-date OSHA training to the engineer prior to the start of work.

**B (Vacant)**

**C Construction**

Add the following to subsection 205.3 of the standard specifications:

Control operations in the contaminated areas to minimize the quantity of contaminated soil excavated and to ensure that excavations do not extend beyond the minimum required to construct utilities and highway improvements unless expressly directed to do so by the engineer.

Assist the environmental consultant in determining the extent of contaminated soil (if any) and/or presence of underground storage tanks, by performing a backhoe test pit investigation, as directed by the environmental consultant, in the following area:

* Lifeforce Chiropractic, 3204 Washington Ave., Station 162+45 to 163+00, from reference line to project limits left. This location was a former gasoline filling station. Sanborn maps from 1933 and 1951 show three gasoline tanks in the Washington Ave. right-of-way. It is not known if the tanks have been removed or are still in the ground.

Perform the backhoe test pit investigation as soon as practical after structures, sidewalks, curb and gutter, and pavement are removed and prior to significant excavation (if any) beginning in that area. The backhoe test pit investigation shall include up to 3 test pits, to a maximum depth of approximately 2 to 3 feet. The test pit investigation shall be incidental to this pay item.

If underground storage tanks (USTs) are encountered during test pit excavations at the location above, the USTs will be removed by others concurrent with the work under this project. The removal of the USTs and any associated remediation activities (if necessary) is estimated to take seven (7) calendar days to complete.

The environmental consultant will periodically evaluate soil excavated from the contaminated areas to determine if the soil will require offsite bioremediation. The environmental consultant will evaluate excavated soil based on field screening results, visual observations, and soil analytical results from previous environmental investigations. Assist the environmental consultant in collecting soil samples for evaluation using excavation equipment. The sampling frequency shall be a maximum of one sample for every 20 cubic yards excavated.

Directly load and haul soils designated by the environmental consultant for offsite bioremediation to the DNR approved bioremediation facility. Use loading and hauling practices that are appropriate to prevent any spills or releases of petroleum-contaminated soils or residues. Prior to transport, sufficiently dewater soils designated for off-site bioremediation so as not to contain free liquids.

If dewatering is required in an area of known contamination, water generated from dewatering activities may contain contaminants and require testing, special handling and disposal. Such water may, with approval from the City of Racine Wastewater Utility, be discharged to the sanitary sewer as follows:

* Meet all applicable requirements of the City of Racine Wastewater Utility including the control of suspended solids. Perform all necessary monitoring to document compliance with the City of Racine Wastewater Utility requirements. Furnish, install, operate, maintain, disassemble, and remove treatment equipment necessary to comply with the City of Racine Wastewater Utility requirements.
* Ensure continuous dewatering and excavation safety at all times. Provide, operate, and maintain adequate pumping equipment and drainage and disposal facilities.

Costs associated with excavation and dewatering in the contaminated area are considered incidental to this pay item. The Wisconsin Department of Transportation will be the generator of regulated solid waste from the construction project.

Limit excavation at the locations described in A.2 to minimize the handling of groundwater. Notify the engineer of any dewatering activities and obtain any permits necessary to discharge or dispose of contaminated water. Provide copies of such Permit to the engineer. Meet any requirements and pay any costs for obtaining and complying with such permit use. Follow all applicable legislative statutes, judiciary decisions, and regulations of the State of Wisconsin.

**D Measurement**

The department will measure Excavation, Hauling, and Disposal of Petroleum Contaminated Soil in tons of contaminated soil, accepted by the bioremediation facility as documented by weight tickets generated by the bioremediation facility.

E Payment

The department will pay for the measured quantities at the contract unit price under the following bid item:

ITEM NUMBER DESCRIPTION UNIT

205.0501.S Excavation, Hauling, and Disposal of Petroleum Contaminated Soil TON

Payment is full compensation for excavating, segregating, loading, hauling, and treatment via bioremediation of contaminated soil; obtaining solid waste collection and transportation service operating licenses; assisting in the collection soil samples for field evaluation; and dewatering of soils before transport, if necessary.

stp-205-003 (20150630)

1. Maintaining Drainage.

Maintain drainage at and through worksite during construction in accordance to subsection 107.22 and sections 204, 205 and 520 of the standard specification.

Use existing storm sewer, temporary inlets, temporary storm sewer pipe, concrete collar, existing drainage channels, or temporary drainage channels or as directed by the engineer to maintain existing surface and pipe drainage. The cost of all work and materials associated is incidental to the work to maintain drainage, including, but not limited to: temporary pipe, concrete collar, and temporary inlet installation and removal.

Pumps may be required to drain the surface, pipe, and structure discharges during construction. Costs for furnishing, operating, and maintaining the pump is considered incidental to the project.

**Dewatering (Mechanical Pumping) for Bypass Water (sediment-free) Operations**

If dewatering bypass operations are required from one pipe structure to another downstream pipe structure or from the upstream to downstream end of a culvert and the bypass flow is not transporting sediments (sand, silt, and clay particles) from a tributary work site area, bypass pumping operations will be allowed provided that the department has been made aware of and approves operation. When pumping bypass flows, the discharge location will need to be stable and not produce any erosion from the discharge velocity that would cause release of sediment downstream.

**Dewatering (Mechanical Pumping) for treatment Water (sediment-laden) Operations**

If dewatering operations require pumping of water containing sediments (sand, silt, and clay particles), the discharge will not be allowed to leave the work site or discharge to a storm water conveyance system without sediment removal treatment. Refer to article Erosion Control in these special provisions for additional requirements.

1. QMP Base Aggregate Dense 1 1/4-Inch Compaction, Item 371.2000.S.

A Description

 (1) This special provision describes modifying the compaction and density testing and documentation requirements of work done under the Base Aggregate Dense 1 1/4-Inch bid items. Conform to standard spec 305 as modified in this special provision and to the contract QMP Base Aggregate article.

 (2) Provide and maintain a quality management program. A quality management program is defined as all activities, including process control, inspection, sampling and testing, and necessary adjustments in the process related to construction of dense graded base which meets all the requirements of this provision.

 (3) Chapter 8 of the department’s construction and materials manual (CMM) provides additional detailed guidance for QMP work and describes sampling and testing procedures.

<http://wisconsindot.gov/rdwy/cmm/cm-08-00toc.pdf>

 (4) This special provision applies to Base Aggregate Dense 1 1/4-Inch material placed: above at least 16 inches of subgrade improvement, 12 inches of subgrade improvement and geogrid or QMP subgrade provisions, between shoulder hinge points and lower than mainline pavement. Unless otherwise specified by the contract, all Base Aggregate Dense 1 1/4-Inch material placed on side roads, private and public entrances, individual ramps less than 1500 feet, passing lanes less than 1500 feet, tapers, turn lanes, and other undefined locations are exempt from the compaction and density requirement modifications and testing contained within this special provision.

B (Vacant)

C Construction

C.1 General

 (1) The engineer shall approve the grade before placement of the base. Approval of the grade shall be in accordance with applicable provisions of the standard specifications.

Add the following to standard spec 305.3.2.2:

 (3) For 1 1/4-Inch dense graded base composed of ≤20% reclaimed asphaltic pavement (RAP) or crushed concrete (RCA), as determined by classification of material (aggregate or RAP and/or RCA) and percentage by weight of each material type retained on the No. 4 Sieve, the contractor must determine the material target density in accordance with:

Method 1: Maximum dry density in accordance with AASHTO T-180, Method D, with correction for coarse particles and modified to require determination of Bulk Specific Gravity (Gm) in accordance with AASHTO T 85. Bulk Specific Gravities determined in accordance with standard spec 106.3.4.2.2 for aggregate source approval may be utilized.

(4) For 1 1/4-Inch dense graded base composed of >20% RAP or RCA, as determined by classification of material (aggregate or RAP and/or RCA) and percentage by weight of each material type retained on the No. 4 Sieve, the contractor may choose from the following options to determine the material target density:

Method 2: Maximum dry density as determined by AASHTO T-180, Method D, with correction for coarse particles, and modified to require determination of Bulk Specific Gravity (Gm) in accordance with AASHTO T 85.

Method 3: Maximum wet density as determined by AASHTO T-180, Method D, modified to define *Maximum Density* as the wet density in pounds per cubic foot of soil at optimum moisture content using Method D specified compaction, with correction for coarse particles, and modified to require determination of Bulk Specific Gravity (Gm) in accordance with AASHTO T 85.

Method 4: Average of 10 random control strip wet density measurements as described in section C.2.5.1.

(5) Compact the 1 1/4-Inch dense graded base to a minimum of 93.0% of the material target density for methods 1, 2 and 3. Compact 1 ¼-inch dense graded base to a minimum of 96% of the material target density for method 4. Ensure that adequate moisture is present during placement and compaction operations to prevent segregation and to help achieve compaction.

 (6) Base Aggregate Dense 1 1/4-Inch will be accepted for compaction on a lot basis.

 (7) Field density tests on materials using contractor elected target density methods 3 or 4 will not be considered for lot acceptance on the basis of compaction under the requirements of this provision until the moisture content of the in-place material is less than 2.0 percentage points above the maximum wet density optimum moisture or 2.0 percentage points of the average moisture content of the 10 density tests representing a control strip, respectively. Determine moisture content using AASHTO T255 as modified in CMM chapter 8 or a nuclear density gauge. If conducting AASHTO T255, sample materials after watering but before compaction.

C.2 Quality Management Program

C.2.1 Quality Control Plan

 (1) Submit a comprehensive written quality control plan to the engineer no later than 10 business days before placement of material. Do not place any dense graded base before the engineer reviews and accepts the plan. Construct the project as the plan provides.

 (2) Do not change the quality control plan without the engineer’s review and acceptance. Update the plan with changes as they become effective. Provide a current copy of the plan to the engineer and post in the contractor’s laboratory as changes are adopted. Ensure that the plan provides the following elements:

1. An organizational chart with names, telephone numbers, current certifications and/or titles, and roles and responsibilities of QC personnel.

2. The process used to disseminate QC information and corrective action efforts to the appropriate persons. Include a list of recipients, the communication process that will be used, and action time frames.

3. A list of source locations, section and quarter descriptions, for all aggregate materials requiring QC testing.

4. Descriptions of stockpiling and hauling methods.

5. An outline for resolving a process control problem. Include responsible personnel, required documentation, and appropriate communication steps.

6. Location of the QC laboratory, retained sample storage, and other documentation.

7. Lot layout and random test location plan.

8. A description of placement methods and operations. Including, but not limited to: staging, construction of an initial working platform, lift thicknesses, and equipment.

C.2.1 Pre-Placement Meeting

A minimum of two weeks before placement of Base Aggregate Dense 1 1/4-Inch material, hold a pre-placement meeting at a mutually agreed upon time and location. Present the Quality Control Plan at the meeting. Attendance at the pre-placement meeting is mandatory for the project superintendent, quality control manager, project inspection and testing staff, all appropriate contractor personnel involved in the sampling, testing, and quality control including subcontractors, and the engineer or designated representatives.

C.2.2 Personnel

 (1) Perform the quality control sampling, testing, and documentation required under this provision using technicians certified by the Department’s Highway Technician Certification Program (HTCP). Have a HTCP Nuclear Density Technician I, or ACT certified technician, perform field density and field moisture content testing. Adhere to the minimum required certifications for aggregate testing per part 7 of the standard specification. AASHTO T180 proctor testing requires a minimum certification level of AGGTEC-1.

 (2) If an ACT is performing sampling or testing, a certified technician must coordinate and take responsibility for the work an ACT performs. Have a certified technician ensure that all sampling and testing is performed correctly, analyze test results, and post resulting data. No more than one ACT can work under a single certified technician.

C.2.3 Equipment

 (1) Furnish the necessary equipment and supplies for performing quality control testing. Ensure that all testing equipment conforms to the equipment specifications applicable to the required testing methods. The engineer may inspect the measuring and testing devices to confirm both calibration and condition. Calibrate all testing equipment according to the CMM and maintain a calibration record at the laboratory.

 (2) Furnish nuclear gauges from the department’s approved product list at:

<http://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/tools/appr-prod/default.aspx>

 (3) Ensure that the nuclear gauge manufacturer or an approved calibration service calibrates the gauge the same calendar year it is used on the project. Retain a copy of the calibration certificate with the gauge.

 (4) For all target density methods, conform to AASHTO T310 and CMM 8-15 for wet density testing and gauge monitoring methods.

 (5) For the specified target density determined using method 1 in section C.1, compute the dry densities for the compacted dense graded base, composed of ≤20% RAP or RCA, according to AASHTO T310.

 (6) For contractor elected target density method 2 in section C.1, compute dry densities of dense graded base composed of >20% RAP or RCA using a moisture correction factor and the nuclear wet density value. Determine the moisture correction value, for each Proctor produced under the requirements of C.2.5, using the moisture bias as shown in CMM 8.15.12.1 and 8.15.12.2, except the one-point Proctor tests of the 5 random tests is not required. Conduct a moisture bias test for every 7500 feet of Base Aggregate Dense 1 1/4-Inch placed. Determine natural moistures in the laboratory.

 (7) Perform nuclear gauge measurements using gamma radiation in the backscatter or direct transmission position. Backscatter may be used only if the material being tested cannot reliably maintain an undistorted direct transmission test hole. Direct transmission tests must be performed at the greatest possible probe depth of 2 inches, 4 inches, or 6 inches, but not to exceed the depth of the compacted layer being tested. Perform each test for at least one minute of nuclear gauge count time.

C.2.5 Contractor Testing

 (1) Perform compaction testing on the mainline dense graded base material, as defined by A.(4). Perform the quality control sampling, testing, and documentation required under this provision using HTCP certified technicians as required in C.2.3. Conform to CMM 8-15 for testing and gauge monitoring methods.

 (2) Select test sites randomly using ASTM Method D3665. Random numbers may be determined using an electronic random number generator. Guidance for determining test locations can be found in section 8-30.9 of the Construction and Materials Manual (CMM). Test locations must be kept a minimum of 3 feet from the unsupported edge of dense graded base layers.

(3) When a density target is determined in accordance methods 3 or 4 in section C.1, conduct density testing on same date of final compaction.

C.2.5.1 Contractor Required Quality Control (QC) Testing

 (1) Conduct testing at a minimum frequency of one test per lot. A lot is 1500 feet for each layer with a maximum width of 18 feet and minimum lift thickness of 2" of Base Aggregate Dense 1 1/4-Inch material placed. Layer widths exceeding 18 feet are divided into equal lots. Each lot of compacted Base Aggregate Dense 1 1/4-Inch material, as defined by A.(4), will be accepted when the lot field density meets the required minimum density. Lots that don’t achieve density requirements must be addressed and approved in accordance with C.2.7.

(2) Add separate lots for passing lanes and individual ramps greater than 1500 feet.

(3) Combine partial lots less than 750 feet with the previous lot. Partial lots greater than or equal to 750 feet are standalone lots.

 (4) Notify the engineer if a lot field density test falls below the required minimum value. Document and perform corrective actions in accordance with C.2.7. Deliver documentation of all compaction testing results to the engineer at the time of testing.

C.2.5.1.1 Target Density Determination

C.2.4.1.1.1 Maximum Wet and/or Dry Density Methods

 (1) For contractor elected target density methods 2 and 3 in section C.1, and contractually specified target density method 1 in section C.1; perform one gradation and 5-point Proctor test before placement of 1 ¼‑Inch dense graded base. Perform additional gradations every 3000 tons in accordance with standard spec 305 and 730. If sampling requirements are identical, samples/testing performed for the QMP Base Aggregate specification may be used to fulfill the gradation testing requirements of this specification.

 (2) Perform additional 5-point Proctor tests, at a minimum, when:

1. The four point moving average gradation on any one sieve differs from the original gradation test result for that sieve, by more than 10 percentage points. The original gradation test is defined as the gradation of the material used to create a 5-point Proctor. Each 5-point Proctor test will remain valid for any material with gradation for all sieves within 10.0 percentage points of that Proctor’s original gradation test.

2. The source of base aggregate changes.

3. Percent target density exceeds 103.0% on two consecutive density tests.

 (3) Provide Proctor test results to the engineer within two business days of sampling. Provide gradation test results to the engineer within one business day of sampling.

 (4) Split each contractor QC Proctor sample and identify it according to CMM 8-30. Deliver the split to the engineer within one business day for department QV Proctor testing.

 (5) Split each non-Proctor contractor QC sample and identify it according to CMM 8-30. Retain the split for 7 calendar days in a dry, protected location. If requested for department comparison testing, deliver the split to the engineer within one business day.

C.2.5.1.1.2 Density Control Strip Method

 (1) For contractor elected target density method 4 in section C.1, construct a control strip for each layer of placement to identify the target wet density for the base aggregate dense material. The control strip construction and density testing will occur under the direct observation and/or assistance of the department QV personnel. For blended material, reprocessed material and crushed concrete, perform additional gradations every 3,000 tons in accordance with standard spec 305 and 730. If sampling frequencies are identical, samples/testing performed for the QMP Base Aggregate specification may be used to fulfill the gradation testing requirements of this specification.

 (2) Unless the engineer approves otherwise, construct control strips to a minimum dimension of 300 feet long and one full lane width.

 (3) Completed control strips may remain in-place to be incorporated into the final roadway cross-section.

 (4) Construct additional control strips, at a minimum, when:

1. The source of base aggregate changes.

2. The four point moving average percentage of blended recycled materials, from classification of material retained on the No. 4 sieve in the original gradation test, differs by more than 10 percentage points. The original gradation test is defined as the gradation of the material used to construct the control strip.

3. The layer thickness changes more than 2.0 inches.

4. The percent target density exceeds 103.0% on two consecutive density measurements.

 (5) Construct control strips using equipment and methods representative of the operations to be used to place and compact the remaining 1 1/4–Inch Base Aggregate Dense material. Wet the base, as mutually agreed upon by the contractor and engineer, to obtain and/or maintain adequate moisture content to ensure proper compaction. Discontinue water placement if the base begins to exhibit signs of saturation or instability.

 (6) After compacting the control strip with a minimum of 2 passes, mark and take density measurements at 3 random locations. Subsequent density measurements will be taken at the same 3 locations. Test locations must be kept a minimum of 3 feet from the unsupported edge of dense graded base layers.

 (7) After each subsequent pass of compaction equipment over the entirety of the control strip, take wet density measurements at the 3 marked locations. Continue compacting and testing until the increase in wet density measurements are less than 2.0 lb/ft3, or the density measurements begin to decrease.

 (8) Upon completion of control strip compaction, take 10 randomly located wet density measurements within the limits of the control strip. The final measurements recorded at the 3 locations under article C.2.4.1.1.2 may be included as 3 of the 10 measurements. Average the ten measurements to obtain the control strip target density and target moisture for use in contractor elected method 4 in section C.1. Test locations must be kept a minimum of 3 feet from the unsupported edge of dense graded base layers.

C.2.6 Department Testing

C.2.6.1 General

 (1) The department will conduct verification testing to validate the quality of the product and independent assurance testing to evaluate the sampling and testing. The department will provide the contractor with a listing of names and telephone numbers of all QV and IA personnel for the project and provide test results to the contractor within two business days after the department obtains the sample.

(2) When a density target is determined in accordance methods 3 and 4 in section C.1, conduct density testing on same date of final compaction.

C.2.6.2 Quality Verification (QV) Testing

 (1) The department will have an HTCP technician, or ACT working under a certified technician, perform QV sampling and testing. Department verification testing personnel must meet the same certification level requirements specified in C.2.3 for contractor testing personnel for each test result being verified. The department will notify the contractor before sampling so the contractor can observe QV sampling.

 (2) The department will conduct QV tests at the minimum frequency of 20% of the required gradation, density and Proctor contractor tests.

 (3) The department will utilize contractor’s QC Proctor results for determination of the material target density. The department will verify QC Proctor values by testing QC Proctor split sample. The department will use QC Proctor value as a target density if the QC and QV Proctor test results meet the tolerance requirements specified in section C.2.6.2(7).

 (4) The department will locate gradation and nuclear density test samples, at locations independent of the contractor’s QC work, collecting one sample at each QV location. Sampling for gradation may be done independently of nuclear density tests, before watering and before compacting. The department will split each QV sample, test half for QV, and retain the remaining half for 10 calendar days.

 (5) The department will conduct QV tests in a separate laboratory and with separate equipment from the contractor’s QC tests. The department will use the same methods specified for QC testing.

 (6) The department will utilize control strip target density testing results in lieu of QV Proctor sampling and testing when the contractor elected target density method 4 in section C.1 is used.

 (7) The department will assess QV results by comparing to the appropriate specification limits. If QV test results conform to this special provision, the department will take no further action. If QV test results are nonconforming, take corrective actions in accordance with C.2.7 until the requirements of this special provision are met. Differing QC and QV nuclear density values of more than 2.0 pcf will be investigated and resolved. Differing QC and QV Proctor values of more than 3.0 pcf will be investigated and resolved.

C.2.6.3 Independent Assurance (IA)

 (1) Independent assurance is unbiased testing the department performs to evaluate the department’s QV and the contractor’s QC sampling and testing, including personnel qualifications, procedures, and equipment. The department will perform an IA review according to the department’s independent assurance program. That review may include one or more of the following:

1. Split sample testing.

2. Proficiency sample testing.

3. Witnessing sampling and testing.

4. Test equipment calibration checks.

5. Requesting that testing personnel perform additional sampling and testing.

 (2) If the department identifies a deficiency, and after further investigation confirms it, correct that deficiency. If the contractor does not correct or fails to cooperate in resolving identified deficiencies, the engineer may suspend placement until action is taken. Resolve disputes as specified in C.2.6.4.

C.2.6.4 Dispute Resolution

 (1) The engineer and contractor should make every effort to avoid conflict. If a dispute between some aspect of the contractor’s and the engineer’s testing program does occur, seek a solution mutually agreeable to the project personnel. The department and contractor shall review the data, examine data reduction and analysis methods, evaluate sampling and testing methods/procedures, and perform additional testing. Use ASTM E 178 to evaluate potential statistically outlying data.

 (2) Production test results, and results from other process control testing, may be considered when resolving a dispute.

 (3) If project personnel cannot resolve a dispute, and the dispute affects payment or could result in incorporating non-conforming product or work, the department will use third party testing to resolve the dispute. The department’s central office laboratory, or a mutually agreed on independent testing laboratory, will provide this testing. The engineer and contractor will abide by the results of the third party tests. The party in error will pay service charges incurred for testing by an independent laboratory. The department may use third party test results to evaluate the quality of questionable materials and determine the appropriate payment. The department may reject material or otherwise determine the final disposition of nonconforming material as specified in standard spec 106.5.

C.2.7 Corrective Action

 (1) Lots not achieving the minimum density requirements may be addressed and accepted for compaction in accordance with the requirements of this section. Unless directed by the engineer, corrective actions taken to address an unacceptable lot must be applied to the entire lot corresponding to the non-conforming test.

 (2) Investigate the moisture content of material in an unacceptable lot. Moisture content testing/samples collected under the QC and/or QV testing articles of this specification may be used to complete this investigation. Obtain moisture content readings in accordance with ASTM D 6938. For material composed of >20% RAP or RCA, correct the moisture content with the moisture correction value using the moisture bias, as shown in CMM 8.15.12.1 and 8.15.12.2, except the one-point Proctor tests of the 5 random tests is not required.

 (3) Lots with moisture contents within 2.0 percentage points of optimum moisture for target density methods 1, 2 and 3 in section C.1, or within 2.0 percentage points of the target moisture content for target density method 4 in section C.1, and exhibiting no signs of deflection when subjected to loading by the heaviest roller used in the placement and compaction operations, shall be compacted a minimum of one more pass using equipment and methods representative of the operations used to place and compact the Base Aggregate Dense 1 1/4–Inch, and density tested at the same location (station and offset) as the failing QC and/or QV density tests. If the change in density exceeds 2.0 lb/ft3 continue subsequent compactive efforts and density testing on that lot, at no additional cost to the department. If the change in density is less than or equal to 2.0 lb/ft3, the lot is accepted as satisfying the compaction requirements of this provision.

 (4) Lots with moisture contents within 2.0 percentage points of optimum moisture for target density methods 1, 2, or 3 in section C.1, or within 2.0 percentage points of the target moisture content for target density method 4 in section C.1 and exhibiting signs of deflection when subjected to loading by the heaviest roller used in the placement and compaction operations, will be reviewed by the engineer. The engineer may request subgrade improvement methods, such as excavation below subgrade (EBS), installation of geotextile fabrics, installation of breaker run material, or others to be completed, or may request an additional pass of compactive effort using equipment and methods representative of the operations used to place and compact the base aggregate dense and density test.

1. If, after an additional pass, the change in density at the same location (station and offset) as the failing QC and/or QV density tests exceeds 2.0 lb/ft3 in a lot continue subsequent compactive efforts and density testing on that lot. If the change in density at the same location (station and offset) as the failing QC and/or QV density tests is less than or equal to 2.0 lb/ft3, and subgrade improvement methods are not requested by the engineer, the lot is accepted as satisfying the compaction requirements of this provision.

2. If subgrade improvement methods are requested by the engineer, upon completion, including compaction of the restored base material, conduct a density test within the improved subgrade limits. This density test result will replace the prior field density value. If the lot field density equals or exceeds the minimum density requirement defined in section C.1, the lot is accepted as satisfying the compaction requirements of this provision. If the lot field density fails to achieve the minimum density requirement defined in section C.1, compact the lot a minimum of one more pass using equipment and methods representative of the operations used to place and compact the base aggregate dense; and density test at the same location (station and offset) as the failing QC and/or QV density tests. If the change in density exceeds 2.0 lb/ft3 continue subsequent compactive efforts and density testing on that lot, at no additional cost to the department. If the change in density is less than or equal to 2.0 lb/ft3, the lot is accepted as satisfying the compaction requirements of this provision.

 (5) Unacceptable lots, with moisture contents in excess of 2.0 percentage points above or below optimum moisture for target density methods 1, 2 or 3 in section C.1; or in excess of 2.0 percentage points above or below the target moisture content for target density method 4 in section C.1; shall receive contractor performed and documented corrective action; including additional density testing.

 (6) Density tests completed subsequent to any corrective action will replace previous field density test results for that lot. Continue corrective actions until the minimum density requirement is achieved or an alternate compaction acceptance criteria is met in accordance with this section.

 (7) Field moisture contents of materials tested using contractor elected target density methods 3 or 4 in section C.1 cannot exceed 2.0 percentage points of the optimum moisture content or 2.0 percentage points of the target moisture content, respectively. Density tests on materials using contractor elected target density methods 3 or 4 in section C.1 will not be considered for lot compaction acceptance until the moisture content of the corresponding density test of the in-place material is less than 2.0 percentage points above of the optimum moisture content or 2.0 percentage points of the target moisture content, respectively.

D Measurement

 (1) The department will measure the QMP Base Aggregate Dense 1 1/4-Inch Compaction bid item by each lot, acceptably completed per C.2.5.1.

E Payment

 (1) The department will pay for the measured quantities at the contract unit price under the following bid item:

ITEM NUMBER DESCRIPTION UNIT

371.2000.S QMP Base Aggregate Dense 1 1/4-Inch Compaction EACH

 (2) Payment is full compensation for performing compaction testing; for sampling and laboratory testing; and for developing, completing, and documenting the compaction quality management program. The department will pay separately for providing aggregate under the Base Aggregate Dense 1 1/4-Inch bid item.

 (3) The department will pay for additional tests directed by the engineer. One engineer directed test is equal to one acceptably completed lot of the QMP Base Aggregate Dense 1 1/4 -Inch Compaction bid item. The department will not pay for additional corrective action tests required due to unacceptable material.

stp-370-010 (20191121)

1. Stamping Colored Concrete, Item 405.1000.

This special provision describes stamping and coloring concrete Custom Red for work constructed under other contract bid items. Conform to standard spec 405 as modified in this special provision.

*Replace subsection 405.2.1.1(1) of the standard specifications with the following:*

 (1) Integrally color concrete using non-fading pigments conforming to ASTM C979.

- For Custom Red: Follow color pigment manufacturer’s recommendations for minimum and maximum percentage of loading by weight of the cementitious material in the mix. Match the concrete color in reasonably close conformance with Custom Red color, which is similar to Federal Standard 595 - 30152.

*Replace subsection 405.2.1.1(3) of the standard specifications with the following:*

 (3) The department will accept the color based on comparison to the final and accepted color sample of the test slab produced by conforming to all requirements under subsection 405.2.1.4.3 of the standard specifications for Trial Batches.

*Replace the entire contents of subsection 405.2.2 of the standard specifications with the following:*

 (1) Furnish Custom Red full-depth colored concrete conforming to subsection 405.2.1 of the standard specifications.

 (2) Running Bond Used Brick, #5018 by Customrock Formliner. Pattern shall exactly match the pattern and stamp that has been used in the Ohio Street medians within the City of Racine limits (i.e. between Wright Street and 13th Street). Provide sample formliner pattern to engineer for approval and to verify conformance with the existing stamped medians before use on the project.

 (3) Provide antiquing release agent that is compatible with the form liner and coloring materials. The antiquing release agent color shall be red brown and shall closely match to Federal Standard 595 – 30108. Provide manufacturer’s color chart for antiquing release agent to engineer for approval before use on the project.

 (4) Provide concrete sealants that are compatible with the formliner and installation methods. Prime Sealant: Glossy. Secondary Sealant: Matte.

*Replace the entire contents of subsection 405.3.2 of the standard specifications with the following:*

1. Color concrete full-depth conforming to subsection 405.3.1 of the standard specifications.
2. Coordinate locations of permanent signage requiring PVC pipe box outs per subsection 634.3.2 of the standard specifications.

 (3) Clean the form liner prior to each pour and ensure that it is free of any build-up. Visually inspect each liner for blemishes or tears and repair, if necessary, per manufacturer’s recommendations. Coordinate with the engineer to verify stamping pattern orientation prior to starting the stamping work.

 (4) Prepare stamp tools with a full, smooth coat of antiquing release agent. While concrete is still in the plastic state, apply imprinting tools to the surface and press into the concrete to create the desired impression. Finish all surfaces uniformly. Ensure that the textured surface is free of laitance; sandblasting is not permitted. Grind or fill any blemishes.

 (5) Shake or spray antiquing release agent over concrete surface. Hand apply antiquing release agent to each individual joint line by spraying or rolling. Stamping and finishing shall exactly match the work that has been done on the Ohio Street Medians in other locations within the City of Racine.

(6) Allow concrete to cure for 5 days after application of the antiquing release agents and stamp pattern. Pressure wash concrete surface to remove approximately 80% of the antiquing release agent. Ensure that concrete is clean and dry before proceeding with concrete sealant. Spray or roll on a single layer of gloss sealant. Follow by spraying on a single coat of matte finish sealer. Do not roll matte finish sealer onto concrete surfaces.

(7) Protect the stamped and colored concrete sidewalks from damage. Do not permit construction traffic or material storage on colored concrete. Exclude other foot traffic from colored concrete for at least 15 days after placement. Remove and replace adjacent concrete that is discolored to the approval of the engineer.

stp-405-100 (20190618)

1. Concrete Pavement Joint Layout, Item 415.5110.S.

**A Description**

This special provision describes providing a concrete pavement or concrete base joint layout design for intersections and marking the location of joints in the field

**B (Vacant)**

**C Construction**

Plan and locate all points necessary to establish the horizontal position of the transverse and longitudinal joints in the concrete to prevent uncontrolled cracking. Submit a joint layout design to the engineer at least 7 calendar days before paving each intersection. Do not lay out joints until the engineer has reviewed the joint layout design. Mark the location of concrete joints in the field. Follow the plan details for joints in concrete making adjustments as required to fit field conditions.

**D Measurement**

The department will measure Concrete Pavement Joint Layout as a single lump sum unit for all joint layout designs and marking acceptably completed.

**E Payment**

The department will pay for measured quantities at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| 415.5110.S | Concrete Pavement Joint Layout | LS |

Payment is full compensation for providing the intersection joint layout designs and marking all joints in the field.

The department will adjust pay for crack repairs as specified in standard spec 415.5.3.

stp-415-020 (20170615)

1. Adjusting Manhole Covers.

This special provision describes adjusting manhole covers conforming to section 611 of the standard specification as modified in this special provision.

Revise subsection 611.3.7 of the standard specification by deleting the last paragraph.

Set the manhole frames so that they comply with the surface requirements of subsection 450.3.2.9 of the standard specification. At the completion of the paving, a 6-foot straightedge shall be placed over the centerline of each manhole frame parallel to the direction of traffic. A measurement shall be made at each side of the frame. The two measurements shall be averaged. If this average is greater than 5/8 inches, reset the manhole frame to the correct plane and elevation. If this average is 5/8 inches or less but greater than 3/8 inches, the manhole frame shall be allowed to remain in place but shall be paid for at 50 percent of the contract unit price.

If the manhole frame is higher than the adjacent pavement, the two measurements shall be made at each end of the straightedge. These two measurements shall be averaged. The same criteria for acceptance and payment as above, shall apply.

stp-611-005 (20030820)

1. Furnishing and Planting Plant Materials.

*Supplement subsection 632.2.1 of the standard specifications with the following:*

Ensure all plants are grown within the states of Wisconsin, Minnesota, Michigan, or parts of northern Illinois, Indiana or Ohio located within Zone 5 of the “Plant Hardiness Zone Map” produced by the United States Department of Agriculture, Miscellaneous Publication No. 1475, issued January, 1990, unless otherwise approved by the engineer.

*Replace subsection 632.2.2.8 (1) of the standard specifications with the following:*

Furnish a list of the sources from which plant materials will be obtained to the engineer. Furnish the list within 15 days of the award of the contract for fall-planted plants and before March 15 for spring-planted plants. Do not alter these lists without the engineer’s approval.

*Supplement subsection 632.2.3.3 of the standard specifications with the following:*

The engineer reserves the right to reject topsoil that does not conform to the specifications and/or does not come with the appropriate material certificates. The engineer may require samples for USDA soil texture classification, pH, % organic matter, nutrient content, caution exchange capacity, soluble salts, and the presence of any materials deleterious to plant growth. Provide testing through a qualified testing laboratory approved by the State of Wisconsin to confirm that topsoil meets the requirements outlined in Subsection 632.2.3.3 of the standard specifications.

*Replace subsection 632.2.4.2 of the standard specifications with the following:*

For fertilizer in plant holes, provide water soluble fertilizer contained in a micropore slow release polyethylene packet with a three-year release. Provide packets with two ounces of fertilizer. A single two ounce packet is considered one unit. Fertilizer shall conform to the following minimum requirements:

Nitrogen, not less than ----- 16%

Phosphoric Acid, not less than ----- 8%

Potash, not less than -----8%

For trees: Use a minimum of two units and provide two units per caliper inch of tree trunk diameter. For one-half caliper measurements, round up to the next unit.

*Replace subsection 632.2.6* *of the standard specifications with the following:*

Provide mulch as specified by bid item Shredded Hardwood Bark Mulch.

*Replace subsection 632.2.7 of the standard specifications with the following:*

Do not use wrapping on plant material.

*Replace subsection 632.2.9 of the standard specifications with the following:*

Provide rodent protection for trees designated on plans and as directed by the engineer.

Provide rodent protection for single-stem trees of rigid plastic mesh made of recycled HDPE with an open mesh matrix ¾” by ¾” with each strand approximately 1/8” x 1/8” x 1/8”. Provide products that are UV treated with a life expectancy of up to five (5) years. The product shall be at least 48 inches high. Supply the source of rodent protection to the engineer. Install rodent protection for single-stem trees according to manufacturer’s written instructions and at a minimum, burying the bottom of the rodent protection 2 to 3 inches into the adjacent soil grades.

Provide rodent protection for multi-stemmed trees of chicken wire or other similarly rigid, matrix-material with an open mesh matrix ¾” by ¾” or less, 48 inches high. Install rodent protection for multi-stemmed trees such that the entire base of the tree is protected; circumference of rodent protection may vary based on specific characteristics of each tree. Bury the bottom 2-3 inches of the rodent protection into the adjacent soil grades.

*Replace subsection 632.2.10 of the standard specifications with the following:*

Use 18-inch soft polymer webbing strap with grommets at each of the two ends to secure wire or twine to tree. Supply source of webbing straps to the engineer. All sources will be subject to verification and approval by the engineer.

Provide tree stabilization (staking and guying) for all trees unless directed otherwise by the engineer or the City of Racine Forestry Department.

*Supplement subsection 632.3.1 (1) of the standard specifications with the following:*

The normal spring planting season for all plants extends to June 15. The normal fall planting season is September 15 to November 15 or until the ground is frozen. Complete the planting of evergreen trees and shrubs in the fall prior to October 15. Obtain approval from the engineer for any plantings between June 15 and September 15. All additional care and maintenance associated with approved plantings occurring within this timeframe, will be at no cost to the department including, but not limited to, supplemental watering above and beyond the typical, specified landscape maintenance and care cycle schedule.

*Supplement subsection 632.3.1 of the standard specifications with the following:*

Take care not to damage or disturb adjacent finished landscape and be responsible for repairing any and all damage caused to adjacent landscape materials. Repairs shall be at the contractor’s expense.

*Replace subsection 632.3.3 of the standard specifications with the following:*

Stake the locations of all plant holes and obtain approval of staked location from the engineer before planting.

*Supplement subsection 632.3.4 of the standard specifications with the following:*

Adequately compact the bottom of the hole to guard against settling. Tamp or water as necessary to create a condition by which plants will not settle in the planting holes. The bottom of the rootball shall be in direct contact with the bottom of the hole.

*Replace subsection 632.3.4 (2) of the standard specifications with the following:*

Excavate the plant hole to the minimum horizontal dimensions indicated in the Plant Data Table included in the plans or as the engineer directs. The minimum horizontal measurement of the plant hole is to be no less than 24 inches greater than the diameter of the ball, container, or root mass for the full depth of the planting hole for trees.

*Replace subsection 632.3.7 (2) of the standard specifications with the following:*

Place the plant in the plant hole with its more desirable face towards the most prominent view and hold in a vertical position. Remove the burlap and other wrapping materials including, but not limited to, twine, wire baskets, and plastic ribbon, from the entire root ball of B&B plants unless the engineer determines that removal of said material will be detrimental to plant stability and/or establishment. At a minimum, the wire basket must be completely removed from the top and sides of the rootball. Move and handle only by the ball or container. Set the plant so that, after settling, the plant root collar is at or 2 inches above the surrounding ground level, as specified above in 632.3.4.

*Supplement subsection 632.3.18.1.2 of the standard specifications with the following:*

The plant establishment period begins on the date of substantial landscape completion. The plant establishment period ends one year from the substantial landscape completion date. Obtain, in writing, the final date for the conclusion of the plant establishment period on or soon after project completion. Review all plant materials with the engineer at conclusion of the establishment period.

*Replace subsection 632.3.19.1 (9) of the standard specifications with the following:*

Remove all staking, bracing wire material, nursery tags and other plant stabilization or non-biodegradable material at the end of each growing season within the establishment period.

Review all rodent protection measures at the end of each growing season within the establishment period with the engineer and City of Racine Forestry Department.

*Supplement subsection 632.3.19.1(2) of the standard specifications with the following:*

The interval for a care cycle is 10-14 days between May 15 and October 15. There will be thirteen (13) required care cycles in a growing season.

Perform a complete and thorough spring clean-out of all landscape areas within the project boundary. Perform spring clean-out during the first care cycle of the year (between May 15 and June 1) or as soon as weather and growing season conditions permit. Do not perform spring clean-out until the ground is no longer saturated from the spring thaw; walking on saturated soil will result in compaction. Spring clean-out removing any material damaged over the winter by pruning according to the language outlined in section 632 of the standard specifications, removal of trash or other debris that has accumulated in project landscaped areas, removal of leaves or other plant debris that has accumulated on the top of the mulched surface, weeding, and any and all other clean-out and maintenance operations as directed by the engineer.

Perform a complete and thorough fall clean-out of all landscape areas within the project boundary. Perform fall clean-out during the last care cycle of the year (between October 1 and October 15). Do not perform fall clean-out if the soil is saturated from rain event; wait until the soil moisture levels have gone down before performing the final clean-out. Fall clean-out includes removing any material damaged during the growing season by pruning according to the language outlined in section 632 of the specifications, removal of trash or other debris that has accumulated in landscaped areas, removal of leaves or other plant debris that has accumulated on the top of the mulched surface, weeding, and any and all other clean-out and maintenance operations as directed by the engineer.

Provide supplemental water during the May 15 and October 15 maintenance period as often as necessary to ensure healthy, growing, and established plant material. Coordinate supplemental water directly with the municipality so the plant material is not being overwatered or under-watered. The contractor will remain solely responsible for plant health and watering maintenance.

Apply an additional 1-2 inches of Shredded Hardwood Bark Mulch immediately prior to the end of the establishment period for tree rings and plant beds. Labor and materials are incidental to Landscape Planting Surveillance and Care Cycles bid item.

1. Landscape Planting Surveillance and Care Cycles.

If the care specialist fails to perform any of the required care cycles as specified in standard spec 632.3.19.1, the department will assess daily damages in the amount of $500 to cover the cost of performing the work with other forces. The department will assess these damages for each day the requirements of the care cycle remain incomplete, except when the engineer extends the required time period.

stp-632-005 (20070510)

1. Field Facilities

Provide field facilities for 60 calendar days beyond the project completion date or until the engineer approves its closure or removal.

*Replace subsection 642.2.1(2) of the standard specification with the following:*

Provide high-speed internet and voice with long distance communications services via a land line for exclusive department use that have the following:

* A dynamic IP address (DHCP).
* The high speed Internet connection must consist of a “small office/home networking” package.
* Ability to accommodate IPSec based VPN products.
* A modem router with a capacity for 10 or more personal computers.
* A connection speed of 1 Mbps or more with 5 computers operating simultaneously.

Provide and install into the field office 2 two line programmable touch-tone telephones and telephone exchanges with local and long distance service. At least one will be a cordless type operating at no less than 2.4 GHz. Configure voice exchanges so that incoming calls for any voice exchange utilize an open exchange. Furnish a voicemail answering service. The telephones and communication services are for the sole use of the department staff.

1. Geotextile Type SR.

Provide type SR geotextile fabric conforming to standard spec 645 and conforming to the following physical properties:

|  |  |  |
| --- | --- | --- |
| **Test** | **Method** | **Value*[1]*** |
| Minimum Tensile Strength  | ASTM D 4595 | 30 lb/in |
| Maximum Elongation at Required Strength | ASTM D 4595 | 15 % |
| Minimum Puncture Strength | ASTM D 6241 | 175 lb |
| Maximum Apparent Opening Size | ASTM D 4751 | No. 40 µm |
| Minimum Permittivity  | ASTM D 4491 | 0.26 s-1 |

*[1]* All numerical values represent minimum/maximum average roll values. Average test results from all rolls in a lot must conform to the tabulated values.

stp-645-035 (20171130)

1. General Requirements for Electrical Work.

*Replace subsection 651.3.3 (3) of the standard specifications with the following:*

(3) Request a signal inspection of the signal installation to the project engineer after completing the Prerequisites for Underground Inspection or Prerequisites for Above Ground Inspection at least five working days prior to the time of the requested inspection. Contact Ara Molitor, City of Racine, at (262) 636-9487 to coordinate the inspection. Ara Molitor or the other person designated by the City of Racine will perform the inspection. In the event of deficiencies, request a re-inspection when the work is corrected. The engineer will not authorize continuation to aboveground work or turn-on until the contractor corrects all deficiencies.

1. Electrical Service Meter Breaker Pedestal Perry Avenue, Item 656.0200.01; Ohio Street, Item 656.0200.02, Lathrop Avenue, Item 656.0200.03; Hayes Avenue Item 656.0200.04; West Boulevard, Item 656.0200.05; SW Quadrant Ohio Street, Item 656.0200.06; NW Quadrant Hayes Avenue, Item 656.0200.07.

*Append subsection 656.2.3 of the standard specifications with the following:*

(2) The department will be responsible for the electrical service installation request for any department maintained facility. Notify the maintaining authority if the signal is not state maintained that it is their responsibility to arrange for the electrical service installation.

(3) Electrical utility company service installation and energy cost will be billed to and paid for by the maintaining authority.

(4) Install the cabinet base and meter breaker pedestal first, so the electrical utility company can install the service lateral. Install a 3-inch conduit from the point of service from the utility to the meter breaker pedestal. Finish grade the service trench, replace topsoil that is lost or contaminated with other materials, fertilize, seed, and mulch all areas that are disturbed by the electrical utility company.

*Append subsection 656.5 of the standard specifications with the following:*

(8) Payment is full compensation for grading the service trench; replacing topsoil; and for fertilizing, seeding, and mulching to restore the disturbed area of the service trench.0

1. Traffic Signal Pole Color, General

**A General**

**A.1 Color**

The color of the signal poles and arms at the intersections of Hayes Avenue and Washington Avenue and West Boulevard and Washington Avenue shall match the color of the decorative lighting assemblies. Submit a sample of the color for approval by the engineer prior to construction.

1. Temporary Traffic Signals for Intersections Ohio Street, Item 661.0200.01; West Boulevard, Item 661.0200.02.

*Replace subsection 661.2.1 (1) of the standard specifications with the following:*

Furnish and install all temporary traffic signal equipment as shown on the plans. All wood poles shall be plumb and level. Provide primary and secondary temporary traffic signal contact names and phone numbers who will be responsible for implementing temporary traffic signal timing changes. The Department may request traffic signal timing changes to an approved timing plan during the project. Implement any approved timing plan change within 24 hours upon notification of the change. Record the times of operation of the timing change and provide this information to the Department.

*Replace subsection 661.2.1 (3) of the standard specifications with the following:*

Use existing underground electric service and meter breaker pedestal for the operation of the Temporary Traffic Signal. The contractor will be responsible for arranging any additional service connection to the temporary signal. The department will pay for all Energy Costs for the operation of the Temporary Traffic Signal.

Furnish and install a generator to operate the temporary traffic signals for the times required to switch the existing permanent traffic signal over to the temporary traffic signal and for the time required to switch the temporary traffic signal back over to the permanent traffic signal.

Contact Dean Lenius at (414) 944-5653, (414) 659-3754 (mobile) at least 4 days prior to making the switch from the existing Permanent Traffic Signal to the Temporary Traffic Signal.

*Replace subsection 661.3.1(2) of the standard specifications with the following:*

Request a signal inspection of the completed temporary traffic signal installation to the project engineer at least five working days prior to the time of the requested inspection. Contact Ara Molitor, City of Racine, at (262) 636-9487 to coordinate the inspection. Ara Molitor or the other person designated by the City of Racine will perform the inspection.

1. Lighting Control Cabinets 120/240 30-Inch, Item 659.2130

*All work under this section shall conform to Section 659 of the Standard Specifications with the following exceptions.*

A time clock shall be added to the lighting control cabinet and wired to provide photocell-on, time clock-off control of the associated lighting circuits. The time clock shall be a multipurpose, 24-hour, UL listed electronic time clock. The unit shall be capable of programming through the use of slide switches and pushbuttons on the unit, and include a manual control selection to override automatic control. The display shall be LED type.

Branch circuit breaker and contactor amp ratings and quantities shall be as shown on the drawings.

1. Section 671 Intelligent Transportation Systems–Conduit

*Replace subsection 671.5 (2) of the standard specifications with the following:*

(2) Payment for the Conduit HDPE and Conduit HDPE Directional Bore bid items is full compensation for providing, hauling, and installing all materials including conduit, fittings, couplers, and bends, and for making necessary connections into existing pull boxes and vaults. Payment includes full compensation for pull wires or ropes; for expansion fittings and caps; for excavating, bedding, backfilling, and restoration of ground to original condition including sand, concrete, or other required materials; for disposing of surplus materials; and for making inspections.

1. Fiber Optic Splice Enclosure.

Perform work in accordance with section 678 of the standard specification except hereinafter modified:

The department will measure Fiber Optic Splice Enclosure as one enclosure for all splices at each location called out on the plans acceptably spliced and completed.

1. Install Fiber Optic Cable Outdoor Plant 48-CT, Item 678.0096.

*Append subsection 678.3.1 of the standard specifications with the following:*

(4) A 12 AWG. XLP insulated, stranded, copper, 600 volt AC, trace wire shall be furnished and installed in each run of conduit, as laid, which is to receive fiber optic cable. The wire shall be approximately 4 feet longer than the run of conduit and shall be doubled back at least 2 feet at each raceway access point. The pull wire shall be anchored at each access point in a manner acceptable to the project manager.

1. Optimized Aggregate Gradation Incentive, Item 715.0710.

**Description**

This special provision describes optional contractor optimized aggregate gradation, optional optimized mixture designs, and associated additional requirements for class 1 concrete used in concrete pavements. Conform to standard specification part 7 and as follows:

**Optimized Aggregate Gradation**

*Replace standard spec 715.2.2 with the following:*

A Job Mix Formula (JMF) contains all of the following:

* Proportions for each aggregate fraction conforming to table 1.
* Individual gradations for each aggregate fraction.
* Composite gradation of the combined aggregates including working ranges on each sieve in accordance with table 2.

Submit the target JMF and aggregate production gradation test results to the engineer for review 10 business days before initial concrete placement.

**TABLE 1 TARANTULA CURVE GRADATION BAND**

|  |  |
| --- | --- |
| SIEVE SIZES | PERCENT RETAINED |
| 2 in. | 0 |
| 1 1/2 in. | ≤5 |
| 1 in. | <16 |
| 3/4 in. | <20 |
| 1/2 in. | 4-20 |
| 3/8 in. | 4-20 |
| No. 4 | 4-20 |
| No. 8*[1]* | <12 |
| No. 16*[1]* | <12 |
| No. 30*[1] [2]* | 4-20 |
| No. 50 *[2]* | 4-20 |
| No. 100 *[2]* | ≤10 |
| No. 200 *[2]* | ≤2.3 |

*[1]* Minimum of 15% retained on the sum of the #8, #16, and #30 sieves.

*[2]* Conform to 24-34% retained of fine sand on the #30-200 sieves.

**TABLE 2 JMF WORKING RANGE**

|  |  |
| --- | --- |
| SIEVE SIZES | WORKING RANGE*[1]*(PERCENT) |
| 2 in. | +/- 5 |
| 1 1/2 in. | +/- 5 |
| 1 in. | +/- 5 |
| 3/4 in. | +/- 5 |
| 1/2 in. | +/- 5 |
| 3/8 in. | +/- 5 |
| No. 4 | +/- 5 |
| No. 8 | +/- 4 |
| No. 16 | +/- 4 |
| No. 30 | +/- 4 |
| No. 50 | +/- 3 |
| No. 100 | +/- 2 |
| No. 200 | ≤ 2.3 |

*[1]* Working range limits of composite gradation based on moving average of 4 tests.

*Replace standard spec 710.5.6 with the following:*

Determine the complete gradation, including P200, using a washed analysis for both fine and coarse aggregates. Test each stockpile for each component aggregate once per 1,500 cubic yards during concrete production.

Take samples by one of the following sampling methods:

1. At the belt leading to the weigh hopper.

2. Working face of the stockpiles at the concrete plant if approved by the engineer.

The department will take independent QV samples using the same sampling method the contractor uses for QC sampling. QV samples may be taken by the contractor's QC personnel if witnessed by the department's QV personnel. The department will split each QV sample and retain half for all dispute resolutions. If QV test results conform to the specification, the department will take no further action. If QV test results are nonconforming, add the QV to the QC test results as if it were an additional QC test.

If, during concrete production, the moving average of four for any sieve fall outside the allowable JMF working range do the following:

1. Notify the engineer of the test results within 1 business day from the time of sampling.

2. Make immediate adjustments to the JMF, within the limits specified in Table 3;

3. Review JMF adjustments with the engineer. Both the contractor and engineer will sign the adjusted JMF if the adjustments comply with Table 3.

4. If the moving average of four falls outside the adjusted allowable working range, stop production and provide a new mix design including JMF to the engineer.

**TABLE 3 ALLOWABLE JMF ADJUSTMENTS**

|  |  |
| --- | --- |
| SIEVE SIZES | ALLOWABLE ADJUSTMENT(PERCENT) |
| >= No. 4 | +/- 5 |
| No. 8 – No. 30 | +/- 4 |
| No. 50 | +/- 3 |
| No. 100 | +/- 2 |

**Dispute Resolution**

The department will resolve disputes as specified in standard spec 106.3.4.3.5 using QV split samples.

**Sublot and Lot Size**

A sublot consists of up to 1,500 cubic yards. A lot consists of two sublots.

**Optimized Concrete Mixtures**

The contractor may use a reduced cementitious content for concrete pavement placed if the contractor does the following:

1. Use an optimized aggregate gradation as defined in this special provision.

2. Conform to the additional testing requirements for flexural strength as specified in the contract special provisions.

3. Submit aggregate gradation result records no more than 2 years old when developing the mix design.

4. Determine the volume of voids in the optimized aggregates using ASTM C29.

5. Download and follow the instructions tab of the Optimized Gradation and Mix Design Spreadsheet located at:

<https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/qmp/default.aspx>

6. Design an appropriate paste content based upon the Performance-based PCC Mix Design Guide located at:

<https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/qmp/default.aspx>

7. Provide a minimum Vpaste/Vvoids of 1.25. (Paste/Void ratio equals the volume of paste divided by the volume of voids.).

8. Evaluate workability of trial batches by following section 6.8 of AASHTO Draft Performance Engineered Concrete Pavement Mixtures Specifications located at:

<https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/qmp/default.aspx>

9. Submit trial batch workability results when submitting the mix design.

10. Submit the CP Tech center computer spreadsheet concrete mix design to the engineer for review at least 3 business days before producing concrete.

11. Provide a minimum cement content of 520 pounds per cubic yard, except if using type I, IL, or III cement in a mix where the geologic composition of the coarse aggregate is primarily igneous or metamorphic materials, provide a minimum cement content of 660 pounds per cubic yard.

12. The contractor may use class C fly ash or grade 100 or 120 slag as a partial replacement for cement. For binary mixes use up to 30% fly ash or slag. For ternary mixes use up to 30% fly ash plus slag in combination. Replacement values are in percent by weight of the total cementitious material in the mix.

13. See CMM 8-70.2.2.3 for additional guidance.

**Measurement**

The department will measure Optimized Aggregate Gradation Incentive by the dollar, for each combined averaged lot of QC test results meeting Table 1.

**Payment**

The department will pay incentive of 3 percent of the contract unit price for concrete pavement under the following bid item:

ITEM NUMBER DESCRIPTION UNIT

715.0710 Optimized Aggregate Gradation Incentive DOL

stp-715-005 (20191121)

1. Flexural Strength for Concrete Mix Design.

This special provision describes optional testing requirements for flexural strength during the mix design process. Conform to standard spec part 7 as modified in this special provision.

*Add the following to standard spec table 701-2:*

|  |  |
| --- | --- |
| TEST | TEST STANDARD |
| Flexural Strength of Concrete | AASHTO T97 |

*Replace 715.2.3.1(1) with the following:*

(1) Provide both compressive and flexural strength information to demonstrate the strength of the proposed mix design. Use either laboratory strength data for new mixes or field strength data for established mixes as follows:

1. Use at least 5 pairs of cylinders for compressive strength. Demonstrate that the 28-day compressive strength will equal or exceed the 85 percent within limits criterion specified in 715.5.2.

2. Use at least 5 pairs of beams for flexural strength. Demonstrate that the 28-day flexural strength will equal or exceed 650 psi.

stp-715-010 (20170615)

1. Performance Engineered Mixture (PEM) Testing

**A Background**

On a national level FHWA is promoting the use of PEM specifications and testing methods. As part of this initiative the Wis.DOT is slowly implementing PEM specifications on certain projects with a focus on collecting as much data as possible before full implantation on a state-wide basis. For this project FHWA has established four categories which are outlined below:

Category A: Incorporating two or more AASHTO PP 84-17 tests in the mix design/approval process. To meet this requirement this project will use:

1. The departments Optimized Aggregate Gradation Incentive SPV.
2. Current SAM shadow standard specifications.
3. The departments Flexural Strength for Concrete Mix Design SPV.
4. The Box Test.

Category B: Incorporating one or more AASHTO PP 84-17 test in the acceptance process. To meet this requirement this project will use:

1. The departments Optimized Aggregate Gradation Incentive SPV.
2. Current SAM shadow standard specifications.
3. Flexural Testing during production. Language provided within this SPV.

Category C: Require a comprehensive QC Plan from the contractor that will be approved and monitored by the state. To meet this requirement this project will use:

1. Language provided within this SPV.

Category D: Require the use of control charts, as called for in AASHTO PP 84-17. To meet this requirement this project will use:

1. Language provided within this SPV.

**B Description**

This special provision describes furnishing additional concrete pavement testing and documentation as hereinafter provided:

During the mix design process perform the Box Test as outlined in AASHTO PP84-17 for each mix design. Include test results with the QMP plan.

In addition to compressive strength testing during production, perform Flexural Strength testing conforming to AASHTO T97 a minimum of once per lot. Test results will not affect incentive or disincentive strength payments. The department will perform QV Flexural Strength testing a minimum of once per lot.

Provide control charts conforming to Section 8 of AASHTO PP84-17 with control limits prior to incorporating material into the project for all QC testing. Plot all QC, QV and process control test results on the control charts. Provide daily updated control chart results, hard copy or electronically, to the project engineer and the Bureau of Technical Services, Chad Hayes at chad.hayes@dot.wi.gov.

1. Planting Soil Mix, Item SPV.0035.01.

**A Description**

This special provision describes providing Planting Soil Mix, in accordance with standard spec 632, as shown on the plans, and hereinafter described.

**B Materials**

Furnish planting soil mix conforming to standard spec 632.2.3.4.

**C Construction**

Remove compacted base from within 6 inches of curbs and pavement of planting beds. Loosen subgrade of planting beds to a minimum depth of 12 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter. Thoroughly blend planting soil mix
off-site before spreading. Do not spread frozen, muddy, or excessively wet planting soil or subgrade. Spread approximately 6-inch thickness of planting soil mix over loosened subgrade. Mix thoroughly into top 6 inches of subgrade. Spread planting soil mix, in maximum of 6-inch lifts, to a minimum depth of 12 inches but not less than required to meet finish grades after natural settlement. Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

**D Measurement**

The department will measure Planting Soil Mix by the cubic year acceptably completed.

**E Payment**

The department will pay for measured quantities at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0035.01 | Planting Soil Mix | CY |

Payment is full compensation for furnishing and placing all materials, including excavation, disposal, hauling, placing, grading.

1. Section Corner Monuments Special, Item SPV.0060.01.

**A Description**

Coordinate with Southeastern Wisconsin Regional Planning Commission (SEWRPC) for the perpetuation and replacement of section corner (Public Land Survey System- PLSS) monuments.

**B Materials**

SEWRPC will provide a pre-cast concrete monument or brass disk to be used to mark the PLSS corner.

Furnish base aggregate dense materials that conform to section 305 of the standard specifications and concrete, asphalt, topsoil or other materials depending on the surface surrounding the corner.

**C Construction**

SEWRPC will perpetuate existing section corner monument. The contractor is responsible to coordinate with SEWRPC and the engineer throughout the perpetuation and replacement process. The engineer will contact SEWRPC at (262) 953-4295 at least two weeks before starting construction operations or the preconstruction meeting to allow for section corner monument perpetuation.

The Contractor must excavate and completely remove the existing monument. The Contractor is responsible for providing a backfilled 3 to 4-foot-deep hole where existing monument was removed. The Contractor is responsible to coordinate the materials and methodology to complete the construction of the surface surrounding the monument. This may include but is not limited to a 2-foot x 2-foot “box out” or 24-inch diameter core hole in concrete, asphalt pavement/paving rings, coring to facilitate poured in place monuments, topsoil, seed and mulching or other materials or methodologies as agreed to by the contractor and SEWPRC.

Contact Information:

Attn: John Washburn

Southeastern Wisconsin Regional Planning Commission

W239 N1812 Rockwood Drive

P.O. Box 1607

Waukesha, WI 53187-1607

Phone (262) 953-4295

Fax (262) 547-1103

E-mail: jwashburn@sewrpc.org

**D Measurement**

The department will measure Section Corner Monuments Special by the individual unit acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.01 | Section Corner Monuments Special | EACH |

Payment is full compensation for all excavating; removal of existing monument, for placing and compacting backfill material; for disposing of surplus materials; for concrete or asphalt material, finishing of roadway or other surfaces and for all coordination with SEWRPC.

621-SER1 (20080714)

1. Parking Meter Posts, Item SPV.0060.02.

**A Description**

Under this specification for parking meter posts, furnish and install the parking meter posts in the location and manner specified in the plans and details. Work includes excavation and installation of a galvanized steel post for attachment of the parking meter. Parking meters will be supplied and installed by the city.

**B Materials**

Each parking meter post shall be as follows:

* Material: Galvanized Steel
* Outside Diameter: 2 3/8-inch.
* Wall Thickness: 0.09-inch.
* Exposed Height: 38 1/4-inch.
* Finish: Standard factory applied powder coat in black.

Contact Ara Molitor, City of Racine, at (262) 636-9487 prior to ordering parking meter post to conform the specification.

Contact Ara Molitor at least five working days prior to the removal of existing meters and posts within the project corridor.

The Department assumes that all parking meters are in good condition prior to the contractor’s removal operation. Prior to removal, inspect and provide a list of any damaged meters to the engineer.

Deliver removed parking meters to 1415 Hampden Place, Racine WI 53403. Contact Ara Molitor at least five working days prior to delivery to make arrangement for delivery.

**C Construction**

Install parking meter post in locations indicated on the plans. Provide mounting per manufacturer’s specification and instructions.

**D Measurement**

The department will measure Parking Meter Posts by each individual parking meter post acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.02 | Parking Meter Posts | EACH |

Payment is full compensation for furnishing and installing parking meter posts, base, and any other materials necessary to install the post.

1. Utility Line Opening (ULO), Item SPV.0060.03.

**A** **Description**

This work consists of excavating to uncover utilities for the purpose of determining elevation and potential conflicts as shown on the plans or as directed by the engineer.

**B (Vacant)**

**C Construction**

Perform the excavation in such a manner that the utility in question is not damaged.

Perform the utility line openings as soon as possible and at least 10 days in advance of proposed utility construction to allow any conflicts to be resolved with minimal disruption. Where utilities are within 6 feet of each other at a potential conflict location, only one utility line opening will be called for. In these cases, a single utility line opening will be considered full payment to locate multiple utilities. Provide utility line openings with a trench up to 10 feet long as measured at the trench bottom, and of any depth required to locate the intended utility.

Notify the utility engineers or their agents of this work a minimum of 3 working days prior to the work so they may be present when the work is completed. Do not perform utility line openings without the approval of the engineer.

**D** **Measurement**

The department will measure Utility Line Opening (ULO) as each individual ULO acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.03 | Utility Line Opening (ULO) | Each |

Payment is full compensation for the excavation required to expose the utility line, backfilling with existing material removed from the excavation, compacting the backfill material, restoring the site, and for cleanup.

Existing pavement removal necessary to facilitate utility line openings will be considered part of or paid for under Utility Line Openings. Replacement pavement, concrete curb, gutter, and sidewalk items will be considered separate from Utility Line Openings and will be measured and paid for separately.

1. Relocating Existing Lighting Unit, Item SPV.0060.04.

**A Description**

This special provision describes relocating existing light poles and attached fixtures from their concrete bases and reinstalling them onto new concrete bases as shown on the plans and as hereinafter provided.

**B (Vacant)**

**C Construction**

Remove, handle, store, and transport existing lighting units in a manner that prevents damage to them. If the contractor damages the lighting units through their own operations, then the contractor shall replace them at no expense to the department.

**D Measurement**

The department will measure Relocating Existing Lighting Unit as each individual relocating existing lighting unit acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.04 | Relocating Existing Lighting Unit | Each |

Payment is full compensation for relocating light poles; including all fixtures; for all required modifications to existing wire and conduit as shown on the plans; for all excavating, backfilling, stockpiling, disposing of surplus material and for cleaning out and restoring the work site.

1. Removing Lighting Control Cabinets, Item SPV.0060.05.

**A Description**

This work shall consist of removing lighting control cabinets, electric services, and the concrete bases.

**B (Vacant)**

**C Construction**

Coordinate with the electric utility for the permanent removal of its service lateral. Return cabinets to the City of Racine. Utility disconnection fees, if any, will be paid by the city.

Contact Ara Molitor, City of Racine, at (262) 636-9487 at least seven working days prior to the removal of the lighting cabinets.

**D Measurement**

The department will measure Removing Lighting Control Cabinets by the unit removed and returned to the Department.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.05 | Removing Lighting Control Cabinets | Each |

Payment will be full compensation for removing, hauling, and properly disposing of materials.

1. Storm Sewer Tap, Item SPV.0060.06.

**A  Description**

This special provision describes tapping various sized storm sewer pipes into existing structures, including manholes or inlets, or other pipes at locations shown on the plans.

Perform the work in accordance to the applicable provisions of sections 608 and 611 of the standard specifications, and as hereinafter provided.

**B  (Vacant)**

**C  Construction**

Tap into the existing structure to allow the pipe to be flush with the interior wall of the existing pipe or structure.

All necessary temporary shoring needed for construction of this item will not be paid for separately but will be included in this item of work.

**D  Measurement**

The department will measure Storm Sewer Tap as each individual storm sewer tap acceptably completed.

**E  Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.06 | Storm Sewer Tap | Each |

Payment is full compensation for providing all materials, including saw cuts, for excavating; for removing concrete; for providing and removing sheeting and shoring, making connections to new or existing facilities, and for cleaning out.

1. Adjust Sanitary Sewer Manhole, Item SPV.0060.07.

**A Description**

This special provision describes work required to adjust sanitary sewer manholes as shown in the plans and in accordance to section 611 of the standard specifications.

**B Materials**

The contractor shall provide pre-cast concrete rings. Trowelable mastic shall be installed between the manhole frame and cast iron rings.

**C Construction**

Adjust manholes by raising or lowering structures. Structures adjusted in pavement shall be raised to within 1/4-inch of finished pavement grades.

**D Measurement**

The department will measure Adjust Sanitary Sewer Manhole by each individual manhole adjustment, acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid items:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.07 | Adjust Sanitary Sewer Manhole | Each |

Payment is full compensation for adjusting manholes; furnishing and placing all materials required for adjusting manhole covers to grade.

1. Moving Existing Bus Stop Shelter, Item SPV.0060.08.

**A Description**

This special provision describes work required to Moving Existing Bus Shelter to the location shown on the plans.

**B Materials**

Provide all materials required to install existing bus shelter at the location shown on the plan. All materials required to install the shelter in new location shall be approved by the City of Racine Transit and Parking Manager (Transit Manager).

**C Construction**

Contact Transit Manger: Michael J. Maierle at (262) 636-9780 five days prior to removing existing shelter from the concrete pad. Remove existing shelter from the exiting location, store them at the location designated by the Transit Manager, construct the concrete pad as shown on the plan, install the hardware required to install shelter on the new concrete pad, install the shelter on new pad as directed by the Transit Manager.

**D Measurement**

The department will measure Moving Existing Bus Shelter by each individual shelter acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid items:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.08 | Moving Existing Bus Stop Shelter | Each |

Payment is full compensation for removing, cleaning, storing, and installing existing bus stop shelter at new concrete pad. Concrete pad is paid separately as a concrete sidewalk.

1. Traffic Signal Controller and Cabinet, Item SPV.0060.09.

**A Description**

This specification describes furnishing an operational NEMA TS2 Type 1 traffic signal control cabinet ready for testing by the department and subsequent installation.

**B. Materials**

**B.1 General**

Furnish and install equipment and assemble the cabinet conforming to the latest revision of NEMA Standards Publication TS 2 Version 2.06 (R2008), Traffic Controller Assemblies with NTCIP Requirements, National Electrical Manufacturers Association, hereinafter called NEMA TS2 Standard, except where modified in this specification. Conform all work to the Wisconsin State Electrical Code (WSEC). Conform all work to section 651 of the Wisconsin Standard Specifications for Highway and Structure Construction, 2017 Edition, as supplemented or modified in this specification.

Provide cabinets designed for TS2 Type 2 operation. Pre‑wire cabinets for a minimum of sixteen phases as specified herein.

All equipment, materials, and cabinet features shall be the same type, make, and model on all cabinets delivered under any one order.

Furnish and install at no extra cost any equipment and materials not specifically described, but required in order to perform the intended functions in the cabinet.

Provide arc flash protection within the cabinet as needed to satisfy NFPA 70E and OSHA requirements.

**B.2 Cabinet**

**C.2.1 Design**

Furnish a door‑in‑door ground mounted (without anchor bolts) aluminum cabinet of clean‑cut design and appearance. Provide a cabinet of minimum size 44 inches wide, minimum 24 inches deep and minimum 52 inches to maximum 60 inches high. The size of the cabinet shall provide ample space for housing the controller, all of the associated devices which are to be furnished with the controller, all other auxiliary devices herein specified, and all equipment to be furnished and installed by others.

The cabinet shall comply with the environmental and operating standards outlined in the NEMA TS2 Standard. The cabinet shall provide reasonable vandalism protection. The cabinet shall have a NEMA 3R rating.

Construct the cabinet from type 5052‑H32 aluminum with a minimum thickness of 0.125 inches. Furnish the cabinet with a natural, uncoated, aluminum finish inside and outside. Continuously weld all seams. The surface shall be smooth, free of marks and scratches. Use stainless steel for all external hardware.

On the top of the cabinet, incorporate a 1‑inch slope toward the rear to prevent rain accumulation. Incorporate a rain channel into the design of the main door opening to prevent liquids from entering the enclosure.

Include an exhaust plenum with a vent screen into the roof of the cabinet. Perforations in the vent screen shall not exceed 0.125 inches in diameter. Insulate the remaining area of the roof of the cabinet with a moisture resistant rigid foam board insulation with a minimum R value of 4.0 that can be perforated for an antenna.

Equip the lower section of the cabinet door with a louvered air entrance. The air inlet shall be large enough to allow sufficient air flow per the rated fan capacity. Louvers must satisfy the NEMA rod entry test for Type 3R ventilated enclosures. Secure a washable, aluminum, removable air filter to the air entrance. The filter shall fit snugly against the cabinet door wall. Attach an aluminum, easily removable, gasketed cover over the air filter and louver.

**B.2.2 Doors**

The cabinet door opening shall be a minimum of 80 percent of the front surface of the cabinet. The main door and police door‑in‑door shall each close against a weatherproof and dust‑proof, closed‑cell neoprene gasket seal. The gasket material for the main door shall be a minimum of 0.188 inches thick by 1.00 inch wide. The gasket material for the police door shall be a minimum of 0.188 inches thick by 0.500 inches wide. Permanently bond the gaskets to the cabinet.

Equip the main door with a three‑point latching mechanism. The upper and lower locking points of the latching mechanism shall each have a pair of nylon rollers. The handle on the main door shall utilize a shank of stainless steel 3/4 inches minimum diameter. The handle shall include a hasp for the attachment of an optional padlock. The cabinet door handle may turn either clockwise or counterclockwise to open, and shall not extend outwards past the edge of the door at any time. Position the lock assembly so the key will not cause any interference with the handle, or a person’s hand on the handle, when opening the cabinet door.

Include on the main door a solid stainless steel rod stop and catch mechanism capable of rigidly holding the door open at approximately 90, 120, and 180 degrees under windy conditions. The operator must be able to engage and disengage the catch with a shoed or booted foot.

The main door hinge shall be a one‑piece, continuous piano hinge with a minimum 0.25 inch stainless steel pin running the entire length of the right side of the door (right‑handed). Attach the hinge in such a manner that no rivets or bolts are exposed.

Equip the main door with a brass Corbin tumbler lock No. 2, swing away dust cap.

Electrically bond the door to the rest of the cabinet with a braided copper grounding conductor. The length of the grounding conductor shall allow the door to swing fully open, without using the stop bar, without stretching or breaking the grounding conductor. The grounding conductor shall not interfere with normal door operation.

Provide a door switch for the main cabinet door. When the door is opened the switch shall send a signal to the controller sufficient for the controller to log an alarm.

**B.2.3 Shelves and Mountings**

Mount a minimum of three vertical "C" channels on each interior side wall of the cabinet for the purpose of mounting the cabinet components. The channels shall accommodate spring mounted nuts or studs. Install three vertical "C" channels or three slotted rails on the interior back wall of the cabinet. All mounting channels and rails shall extend to within 7 inches of the top and bottom of the cabinets and shall be of sufficient strength to rigidly hold specified shelves and equipment.

Provide two full‑width, 11‑inch deep, fully adjustable, aluminum shelves to support the controller and other equipment. Mount the lower shelf at a height above the bottom of the cabinet such that the shelf and attached drawer does not interfere with the ability to tilt the terminal facility forward on its hinges for maintenance purposes. Mount the top shelf at least 13 inches above the surface of the lower shelf.

Provide Siemens M62 controller and EDI MMU2. Locate on the lower shelf. Locate the loop detector racks and other auxiliary equipment on the top shelf. The power supply may be mounted on either shelf.

Provide an under‑shelf drawer beneath the lower shelf. The drawer shall be approximately 20 inches wide and a minimum of 12 inches deep. The drawer shall operate easily and smoothly, and shall have a stop to prevent inadvertently pulling the drawer out of its support. Design the stop to allow purposeful complete removal of the drawer without the use of tools. Provide a slide out shelf capable of supporting a 5 pound, 14‑inch wide by 11‑inch deep load. This slide out support can be the cover for the drawer, as long as it extends far enough out to support the entire 11‑inch depth of the laptop.

Provide a fully wired receptacle on the door that is specifically designed to support the twist and lock style plug specified for the heater element. Locate receptacle such that when installed, heater should be mounted a minimum of 6.5 inches from the bottom of the door.

**B.2.4 Auxiliary Cabinet Equipment**

Ventilate the cabinet by means of a 120 VAC, 60HZ, tube axial compact type fan located in the top of the cabinet plenum. The fan’s free delivery airflow shall be equal to or greater than 100 cubic feet per minute. The magnetic field of the fan motor shall not affect the performance of control equipment. The fan bearings shall operate freely. The fan unit shall not crack, creep, warp, or have bearing failure within a seven year duty cycle. The maximum noise level shall be less than 40 decibels. The fan unit shall be corrosion resistant. The thermostat's turn on setting shall be adjustable from 90 to 120 degrees F. The fan shall run until the cabinet temperature decreases below the turn‑on temperature setting by approximately 30 degrees F. The fan shall be fused.

Mount a single LED light strip (GESS32‑13200K or approved equal) at the top of the cabinet and the appropriate power supply to support up to four light strip panels. Wire the power supply to an ON/OFF toggle switch. Mount two LED light strips under the lower shelf fed off the power supply on the top of the cabinet. Locate one strip on each side of the drawer.

Provide a thermostat with an adjustable setting from 0 to 100 degrees F. Install the thermostat on the interior ceiling of the cabinet well away from the cabinet light or any heat source. Provide a thermal limit switch to prevent the heater’s protective cover from exceeding 170 degrees F.

**B.3 Terminals and Facilities**

**B.3.1 Terminal Facility**

The terminal facility panel shall be constructed from 5052‑H32 brushed aluminum of 0.125 inches minimum thickness and formed so as to eliminate any flexing when plug‑in components are installed.

Mount the bottom of the terminal facility a minimum of 9 inches from the bottom of the cabinet. Hinge the terminal facility at the bottom to allow easy access with simple tools to all wiring on the rear of the panel. It shall not be necessary to remove the lower shelf, the shelf drawer, or any shelf‑mounted equipment to hinge down the terminal facility. Provide sufficient slack in the load bay wiring to allow for dropping the load bay.

Fully wire the terminal facility with sixteen load switch sockets: eight phases of vehicular, four phases of pedestrian, and four phases of overlap operation; eight flash transfer relay sockets; one flasher socket; and two terminal facility BIU rack slots. The use of printed circuit boards is not acceptable on the terminal facility, except printed circuit boards are acceptable for the BIU interface with the load bay. Position the 16 load switch sockets in two horizontal rows of eight sockets each. Support the load switches and flasher by a bracket or shelf extending at least 3 inches from the terminal facility.

Label all terminals, load switches, and flash transfer relay sockets. Label reference designators by silk‑screening on the front and rear of the terminal facility to match drawing designations.

Provide rack mounted BIUs. Provide a dual‑row, 64‑pin female DIN 41612 Type B connector for each BIU rack position. Provide card guides for both edges of the BIU. Terminal and facilities BIU mounting shall be an integral part of the terminal facility.

Provide one 16‑channel, 8‑position, TS2 detector rack with an integrally mounted BIU mounting. Rack shall be addressable. Power the detector rack by the cabinet power supply. Fasten the loop detector racks towards the left side of the top shelf. Additional racks shall be treated as add‑on items.

For BIU rack connectors, provide pre‑wired address pins or jumper plugs corresponding to the requirements of the NEMA TS2 Standard. The address pins or jumper plugs shall control the BIU mode of operation. BIUs shall be capable of being interchanged with no additional programming.

For the terminal facility, contain all field wires within one or two rows of horizontally‑mounted Marathon (or approved equal) heavy duty terminal blocks. Terminate all field output circuits on an unfused terminal block with a minimum rating of 10 amps. Use mechanical connector lugs rated for copper wire. Angle the lower section of the terminal block out from the back of the cabinet at approximately a 45 degree angle.

Identify all field input/output (I/O) terminals by permanent alphanumeric labels. All labels shall use standard nomenclature per the NEMA TS2 Standard.

All field flash sequence programming at the field terminals shall be able to be accomplished with the use of only a screwdriver.

Wire field terminal blocks to use three positions per vehicle or overlap phase (green, yellow, red).

Wire one RC network in parallel with each flash transfer relay coil.

Permanently label all logic‑level, NEMA‑controller and MMU2 input and output terminations on the terminal facility. Identify the function of each terminal position on the cabinet drawings.

Terminal blocks for DC signal interfacing shall have a number 6‑32 x 7/32 inch screw as minimum. Functions to be terminated shall be as specified in the listing of Input/Output Terminals in Section 5 of the NEMA TS2 Standard.

Conform all terminal facility and cabinet wiring to the WSEC. The green/walk, yellow, and red/don't walk load switch outputs shall be minimum 16 gauge wire. The MMU2 (other than AC power), controller I/O, and logic ground shall be minimum 22 gauge wire. All wire colors shall be consistent in all cabinets furnished in one order.

**B.3.2 Auxiliary Panels**

**B.3.2.1 Vehicle Detection Interface Panel**

Provide a 32‑position interface panel or two 16‑position panels. Each interface panel shall allow for the connection of 32 or 16 independent field loops, respectively. The panels shall have barrier strip type terminals using 8‑32 screws and be rated for 20 inch pounds of torque.

Provide a ground bus terminal between each loop pair terminal to provide a termination for the loop lead‑in cable ground wire. Secure the interface panels to a mounting plate attached to the left interior side wall of the cabinet.

Provide a cable consisting of 20 AWG twisted pair wires to enable connection to and from the interface panel to a detector rack. The twisted pair wires shall be color‑coded wires. Provide a cable of sufficient length to allow the detector rack to be placed on either shelf.

Provide a pathway or mechanism for securing loop lead in cables neatly next to interface panel.

Identify all termination points by a unique number silk screened on the panel.

**B.3.3 Conductors and Cabling**

All conductors in the cabinet shall be copper 22 AWG or larger. All 14 AWG and smaller wire shall conform to MIL‑W‑16878/1, Type B, 600V, 19‑strand tinned copper. The wire shall have a minimum of 0.010 inches thick PVC insulation without clear nylon jacket and rated to 105 degrees Celsius. All 12 AWG and larger wire shall be UL or NRTL listed THHN/THWN 90 degrees Celsius, 600V, 0.020 inches thick PVC insulation, and clear nylon jacketed.

Provide controller and MMU2 cables of sufficient length to allow the units to be placed on either cabinet shelf in the operating mode. Connecting cables shall be sleeved in a braided nylon mesh. Exposed tie‑wraps and interwoven cables are unacceptable.

Provide the cabinet configuration with enough SDLC RS‑485 Port 1 communication cables to allow full capabilities of that cabinet. Each communication cable connector shall be a 15‑pin metal shell D subminiature type. The cable shall be a shielded cable suitable for RS‑485 communications. Secure all connecting cables and wire runs by mechanical clamps. Stick‑on type clamps are not acceptable.

Pre‑wire the terminal facility for a Type 16 MMU2.

All wiring shall be neat in appearance. Stow excess cable behind the terminal facility or below the shelves in order to allow easy access to the terminal facility and cabinet components. All cabinet wiring shall be continuous from its point of origin to its termination point. Butt type connections/splices are not acceptable.

Wire the grounding system in the cabinet into three separate circuits: AC Neutral, Earth Ground, and Logic Ground.

Optoisolate all pedestrian pushbutton inputs from the field to the controller through the BIU and operate at 12 VAC.

Hook or loop all wire, size 16 AWG or smaller, at solder joints around the eyelet or terminal block post prior to soldering to ensure circuit integrity. Lap joint soldering is not acceptable.

**B.3.4 Cabinet Switches**

Locate the following switches on a maintenance panel on the inside of the cabinet door:

a. Controller On/Off.

b. Stop Time (Three Positions).

Position Switch Label Function.

Upper Stop Time Place stop time on the controller.

Center Run Remove the stop time input to the controller.

Lower Normal Connects the MMU2 to the controller stop time input.

Locate the following switches behind the police access door:

a. Signal/Off.

b. Flash/Normal.

c. Hand/Auto.

d. Coiled hand control and cable.

The above switches shall function as follows:

Off: Signals Dark.

Signal: Signals On and operating as follows:

Auto Hand.

Flash: Signals Flash Signals Flash.

Normal: Signals Normal Signals Advance by use of hand control.

**B.4 Power Panel**

**B.4.1 Design**

The power panel shall consist of a separate module, securely fastened to the interior right side wall of the cabinet. Wire the power panel to provide the necessary power to the cabinet, controller, MMU2, cabinet power supply, and all auxiliary equipment. Manufacture the power panel from 0.090‑inch, 5052‑H32 aluminum. Panel layout shall facilitate field inspection and maintenance accessibility without excessive disassembly or special tools.

Provide a light, tough, transparent, weather‑resistant, non‑yellowing, thermoplastic cover, rigidly mounted over the full power panel, with access holes for circuit breakers and other equipment, and open on the sides for ventilation.

All components of power panel shall meet or exceed the electrical requirements as laid out in section 5.4 of the NEMA TS2 Standard.

Provide all necessary components for a battery backup system to be retrofit into the cabinet without needing to make changes to the wiring of the power panel. Battery Backup system will support only essential equipment in the cabinet. Fan, heater, and lighting panel are examples of non‑essential equipment not expected to be supported by the battery backup system.

Do not install a jumper between the equipment ground and neutral. Instead, provide this bonding jumper in a separate package labeled “For Grounding Purposes.”

**B.4.2 Grounding System**

On each side of the cabinet, provide a minimum 20‑position neutral bus bar capable of connecting three #12 AWG wires per position.

Also on each side of the cabinet, provide a minimum 20‑position equipment ground bus bar capable of connecting three #12 AWG wires per position. Install this bus bar below the neutral bus bar.

**B.4.3 Power receptacles**

Mount a 120 VAC 20 amp, NEMA 5‑20R GFCl convenience outlet on the interior right side wall above or as part of the power panel. The outlet shall be fully operational and fuse protected.

Mount a 2‑gang outlet on each side of the cabinet. Both of these outlets should be wired off the circuit breaker fed off the surge protector.

**B.5 Auxiliary Devices**

**B.5.1 Flashers**

Provide one solid state flasher conforming to the requirements of section 6.3 of the NEMA TS2 Standard.

**B.5.2 Flash Transfer Relays**

Provide four flash transfer relays conforming to the requirements of section 6.4 of the NEMA TS2 Standard.

**B.5.3 Cabinet Power Supply**

Provide one power supply with each cabinet conforming to the requirements of section 5.3.5 of the NEMA TS2 Standard. Provide LED indicators for the 12 VDC, 12 VAC, and 24 VDC outputs. Provide jack plugs on the front panel for access to the +24 VDC for test purposes.

G. Bus Interface Units (BIU)

Provide three BIUs conforming to the requirements of section 8 of the NEMA TS2 Standard. Provide two BIUs with the main panel and one BIU with one of the detector racks.

**B.6 Documentation**

**B.6 Cabinet Intersection Wiring Diagrams**

At the time of the cabinet delivery, furnish with the cabinet three sets of printed 22‑inch by 34‑inch wiring diagrams.

**C Construction**

Install equipment as shown on the plans and as specified in this special provision.

**D Measurement**

The department will measure Traffic Signal Controller & Cabinet as a single unit of work acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item.

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.09 | Traffic Signal Controller and Cabinet | EACH |

Payment is full compensation for furnishing and installing the signal controller and conflict monitor together with cabinet, switches for flashing operation and fittings as are necessary to assure that the controller will perform said functions.

1. Luminaires Utility LED 100 Watts, Item SPV.0060.10

**A Description**

Perform work in accordance with the applicable provisions of section 659 of the standard specifications and as detailed on the plans.

**B Material**

Furnish light fixture with LED lamping.

Fixture shall be equipped with full cutoff, Type II segmented optics as shown on the plans.

LED lamping shall have a color temperature rating of 5700 degrees Kelvin; ±400K.

LED driver shall have an operating temperature rating of ‑40°F to 105°F.

Fixture shall be LEDway Street Light model STR‑LWY‑2M‑HT‑06‑E‑UL‑SV‑525 as manufactured by Cree, or equal.

Provide mounting hardware as required to mount LED light fixture on light pole arms. All mounting hardware shall be stainless steel.

**C (Vacant)**

**D (Vacant)**

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.10 | Luminaires Utility LED 100 Watts | EACH |

Payment will be in accordance with subsection 659.5 of the standard specifications.

1. Concrete Bases Type A, Item SPV.0060.11.

**A Description**

This special provision describes furnishing and installing concrete bases in the locations shown in the plans.

**B Materials**

The concrete base provided under this bid item shall be the similar in design to the department standard type 5 concrete base with the following modifications, as shown in the plans:

* Base shall be 24 inches in diameter instead of 20 inches in diameter.
* Bolt circle shall be 12 inches diamond pattern.
* Anchor bolts shall be 1-inch diameter x 36-inch + 4-inch L L‑type with 4 1/2-inch bolt projection.
* Reinforcing bars shall be as detailed on the plans.

**C Construction**

Construct concrete base according to section 654 of the standard specifications.

**D Measurement**

The department will measure Concrete Bases Type A as each individual unit, acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.11 | Concrete Bases Type A | Each |

Payment is full compensation for providing and installing all materials necessary to completely construct the concrete bases.

1. Arm‑Mounted Decorative Lighting Unit, Item SPV.0060.12.

**A Description**

This special provision describes furnishing and installing decorative light poles, decorative lights, decorative lighting arms, and appurtenances.

**B Materials**

Decorative lighting assembly shall be as shown on the plans and as specified herein. The decorative lighting assembly including decorative arm shall be as manufactured by Holophane Lighting, Inc., Model DS210‑928A300MOD‑P9(3X9)(2)HHBK; WLC48/1CABKH; RFD167163; ESL2 P30S 50K AS BK TG 3 S;WLLF/200‑CA/BK. Fixture voltage and accessories shall be coordinated with the City of Racine’s personnel. Holophane Lighting is locally represented by Steve Cotey at (262) 783‑4100. Holophane Luminaire: Esplanade Utility Teardrop LED, 118 watt system, 5K, AutoSensing, 120‑277 Volt, Black Finish, Asymmetric Teardrop Type 3 Prismatic Glass. Pole/Arm: Round Tapered nominal 30 feet steel pole, modified to mate with owner supplied decorative clamshell base cover (clamshell base cover to be installed in future by others). 3-inch diameter by 9-inch tall post-top tenon, two handholes with covers, West Liberty 48-inch roadway arm with pendant adaptor for single luminaire, West Liberty decorative cast aluminum, black leveling arm fitter with 2-inch slip‑fit connection. All finishes shall be standard Holophane black.

**C Construction**

The lighting unit shall be assembled and installed per the manufacturer’s instructions. Install unit with proper luminaire orientation and as indicated on the plans.

**D Measurement**

The department will measure Arm‑Mounted Decorative Lighting Unit as each individual unit, acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid items:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.12 | Arm‑Mounted Decorative Lighting Unit | EACH |

Payment is full compensation for providing and installing all materials including hardware, fittings, mounting devices, and attachments necessary to completely install the decorative lighting assembly.

1. Install Existing Circuit Into New Pull Box, Item SPV.0060.13.

**A Description**

This special provision describes installing existing circuit unit duct/conduit into a proposed pull box and splicing with proposed wiring within the pull box.

**B Materials**

Furnish model SSWB splice connectors as manufactured by Polaris Electrical Connectors, model ULS splice connectors as manufactured by Connector Manufacturing Company, or approved equal, quantity and size as required to splice existing wire quantities and sizes. Furnish backfill material, topsoil, fertilizer, seed, and mulch conforming to the requirements of pertinent provisions of the standard specifications.

**C Construction**

Expose the outside of the existing unit duct/conduit and wire near the new pull box installation location. Cut and reroute the existing unit duct/conduit and wire into an appropriately sized hole in the new pull box for the entering unit duct/conduit and wire, leaving sufficient wire length to splice to new wiring within the pull box. Where existing wiring is direct-buried cabling, a properly sized conduit sleeve (2-inch minimum size), four feet minimum length, shall be provided for direct-buried cabling entry into the pull box. Fill void area between the drilled hole and unit duct/conduit with an engineer-approved filling material to protect against conduit movement and entry of fill material into the pull box. Tamp backfill into place.

Splice the existing wiring with new electrical wire lighting within the new pull box using new splice connectors.

**D Measurement**

The department will measure Install Existing Circuit Into New Pull Box as a single unit of work acceptably completed. Up to five splice connectors installed per unit duct/conduit entry will be considered a single unit. Splice connectors in excess of five will constitute multiple units of payment.

**E Payment**

The department will pay for measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.13 | Install Existing Circuit Into New Pull Box | EACH |

Payment is full compensation for excavating, drilling holes; furnishing and installing all materials, including splicing connectors, coarse aggregate, sand, bedding, and backfill; for excavating and backfilling; for rerouting existing unit duct/conduit; for furnishing and placing topsoil, fertilizer, seed, and mulch in disturbed areas; for properly disposing of surplus materials; and for making inspections.

1. Tower Type A, Item SPV.0060.14, Tower Type B, Item SPV.0060.15, and Tower Type C, Item SPV.0060.16.

**A Description**

This special provision describes providing towers Type A, B, and C. The contractor shall engineer, furnish and place the towers with concrete base in the locations and manner specified in the plans and details. Work includes all engineering for wind loading, breakaway bases, production of detailed and engineer stamped drawings. Electrical service to each of the towers and hook up the towers is specified under a different bid item.

**B Materials**

Submit product data including material descriptions, dimensions of individual components and product profiles, and shop drawings for review and approval. Shop drawings include engineer stamped plans, elevations, and large-scale details and sections of typical members and other components. Show mounting methods, grounds, mounting heights, LED lighting mounting details, reinforcement, accessories, and installation and tower mounting details. Comply with all applicable local, state and national electric codes and ordinances. Design bases for Types A, B, and C to be breakaway as required by the WisDOT. Include the following samples for verification and approval:

Powder coated metal material samples and color finishes for the Towers.

Color Acrylic Lens: Samples of standard colors for initial and final selection.

Woven wire mesh: 12-inch x 12-inch samples, finished.

Decorative medallions and rivets: Full size samples.

Show base materials, samples of applied textured finishes, LED Light fixtures, wiring diagrams and methods of attachment.

Furnish four-sided metal structures as shown on the plans conforming to the following:

Aluminum Angle and Tube Extrusions: ASTM B 221 alloy and temper recommended by aluminum producer and finisher for type of use and finishes indicated, and with at least the strength and properties of Alloy 6063-T5.

Aluminum Sheet and Plate: ASTM B 221 alloy and temper recommended by aluminum producer and finisher for type of use and finishes indicated, and with at least the strength and properties of
Alloy 5005-H32.

16-gauge aluminum trim, 12-gauge to 16-gauge aluminum clips and type 304 stainless steel fasteners and miscellaneous.

Acrylic Sheet: ASTM D 4802, Category A-1 (cell cast sheet), Type UVA (UV absorbing).

Woven Wire Mesh: Lock crimp woven aluminum wire, 2-inch x 2-inch grid pattern, powder coated finish.

Monochromatic LED uplight, UL Wet Location and IP68 rated, 4K color temperature and integral mounted LED driver with quick connectors, powered at 120 volts AC.

Metal Finishes: Powder coated finish to match towers at Washington Ave. and 7th Street roundabout in Racine.

Concrete bases per Section 654 Bases

**C Construction**

Install concrete bases per Section 654 Bases and in accordance to shop drawings.

Install towers true and plumb per manufacturer’s recommendations and shop drawings.

After installation, clean soiled tower surfaces according to manufacturer's written instructions. Protect towers from damage until acceptance by Owner.

**D Measurement**

The department will measure Tower Type A, B, and C the each acceptably completed.

**E Payment**

The department will pay for the measured quantities at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.14 | Tower, Type A  | EACH |
| SPV.0060.15 | Tower, Type B  | EACH |
| SPV.0060.16 | Tower, Type C  | EACH |

Payment is full compensation for furnishing and placing all materials, and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

1. Panel Type A, Item SPV.0060.17, Panel Type B, Item SPV.0060.18, and Panel Type C, Item SPV.0060.19.

**A Description**

This special provision describes providing Panel Type A, B, and C, as shown on the plans and hereinafter described.

**B Materials**

Design bases to be breakaway as required by the WisDOT.

Engineer brackets to support wind loads from decorative panels.

Submit shop drawings for review and approval.

Furnish concrete and steel reinforcement conforming to section 654 of the standard specification.

Use materials of designated type, size, and thickness or, if not shown, of required strength, stiffness, and durability. Work to field measurements and shop drawings, using industry standard methods of fabrication and support. Miscellaneous framing and support members shall comply with AISC Specification.

Where exposed to view, use materials that are smooth and free of surface blemishes such as pitting, seam marks, roller marks, rolled trade names, and roughness.

Form work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges, including panel cutouts, to a radius of approximately 1/32 in. unless otherwise shown.

Weld filets so that they are smooth without undercut and no splatter; comply with AWS recommendations.

Preassemble and fit items to avoid field splicing and assembly.

Aluminum Angle and Tube Extrusions: ASTM B 221 alloy and temper recommended by aluminum producer and finisher for type of use and finishes indicated, and with at least the strength and properties of Alloy 6063-T5.

Aluminum Sheet and Plate: ASTM B 221 alloy and temper recommended by aluminum producer and finisher for type of use and finishes indicated, and with at least the strength and properties of
Alloy 5005-H32.

Woven Wire Mesh: Lock crimp woven aluminum wire, 2-inch x 2-inch grid pattern, powder coated finish.

16-gauge. Aluminum trim, 12-gauge to 16-gauge aluminum clips and type 304 stainless steel fasteners and miscellaneous.

Metal Finishes: Powder coated finish to match towers at Washington Avenue and 7th Street roundabout in Racine.

**C Construction**

Install per manufacturer’s recommendation and as shown on shop drawings. Set work elevation, plumb, level, and true. Provide temporary bracing as required.

**D Measurement**

The department will measure Panel Type A, B and C by each acceptably completed.

**E Payment**

The department will pay for the measured quantities at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.17. | Panel Type A  | EACH |
| SPV.0060.18. | Panel Type B  | EACH |
| SPV.0060.19. | Panel Type C  | EACH |

Payment is full compensation for furnishing, transporting and placing all materials.

1. Tree Grate, Item SPV.0060.20.

**A Description**

This special provision describes providing tree grate with frame and all hardware necessary for installation in the location and manner specified in the plans.

**B Materials**

Submit shop drawings for review and approval.

Furnish Gray Iron castings tree grates and frames conforming to ASTM A-48 Class 35B or better. They shall be of uniform quality, free from blowholes, porosity, hard spots, shrinkage distortion or other defects. The tree grates and frames shall be smooth and well cleaned by shot-blasting and free of paint or primer. The tree grate pattern shall conform to the pattern shown in the details and shall comply with A.D.A. Guidelines.

**C Construction**

Install as detailed per plans and in accordance with the manufacturer’s recommendations. Set frame so that grate will be flush with adjoining surfaces. Shim grate with soil-resistant plastic if necessary. Maintain a 3-inch minimum growth radius around base of tree; break away units of casting, if necessary, according to manufacturer's written instructions.

**D Measurement**

The department will measure Tree grate by each acceptably completed.

**E Payment**

The department will pay for the measured quantities at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.20 | Tree Grate  | EACH |

Payment is full compensation for furnishing and installing all necessary materials, including tree grate, frame, and necessary hardware and all labor, tools, and equipment and incidentals necessary to complete this item of work.

1. Perennial Plants, Purple Coneflower, Item SPV.0060.21 and Prairie Dropseed, Item SPV.0060.22.

**A Description**

This special provision describes providing perennial plant materials in accordance with the plans. Complete in place at the locations as designated on the plans, or as directed by the engineer conforming to standard spec Section 632 and as hereinafter provided.

**B Materials**

Furnish per Section 632.1.

**C Construction**

Install plants as detailed and according with pertinent provisions of section 632 of the standard specifications.

**D Measurement**

The department will measure Perennial Plants by each acceptably completed.

**E Payment**

The department will pay for measured quantities at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.21 | Perennial Plant, Purple Cone Flower  | EACH |
| SPV.0060.22 | Perennial Plant, Prairie Dropseed | EACH |

Payment is full compensation for providing, transporting, handling, storing, placing, and replacing plant materials; for excavating all plant holes, salvaging topsoil, mixing, and backfilling; for providing and applying all required fertilizer, mulch, water, herbicides, for disposing of all excess and waste materials; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work. Bid item 632.9101 covers landscape planting surveillance and care for perennial.

1. Concrete Bases Type 10 Special, Item SPV.0060.23.

**A Description**

This special provision describes constructing concrete bases for Monotube Type 9 and 10 Special Poles, conform to section 654 of the standard specifications. Details are shown in the plans.

**B Materials**

Materials shall be according to section 654 of the standard specifications.

**C Construction**

Construction shall be according to section 654 of the standard specifications.

**D Measurement**

The department will measure Concrete Bases Type 10 Special at the contract unit price acceptably completed.

**E Payment**

The department will pay for the measured quantities at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.23. | Concrete Bases Type 10 Special | EACH |

Payment is full compensation for providing concrete bases; for embedded conduit and electrical components; for bar steel reinforcement; if required; for excavating, backfilling, and disposing of surplus materials; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

1. Monotube Type 9 and 10 Special Pole, Item SPV.0060.24, Item SPV.0060.25.

**These SPVs will be replaced with Standard Specification after 2021 Specification is released.**

**A Description**

This special provision describes installing Monotube Type 9 and 10 Special Pole as shown on the plans and as directed by the Engineer.

**B Materials**

Conform to the pertinent requirements of subsection 657.2 of the standard specifications and as shown on the plans.

**C Construction**

Conform to the pertinent requirements of subsection 657.3 of standard specifications and as shown on the plans.

**D Measurement**

The Department will measure Monotube Pole Type 9 and 10 Special Pole as each individual pole installed and acceptably completed.

**E Payment**

The Department will pay for the measured quantities at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.24 | Monotube Type 9 Special Pole (Bid Item 657.0347) | EACH |
| SPV.0060.25 | Monotube Type 10 Special Pole (Bid Item 657.0352) | EACH |

Payment is full compensation for installing all materials, including all associated hardware, fittings, mounting devices, and attachments necessary to completely install the pole.

1. Monotube Arms Special (Length), Item SPV.0060.26, Item SPV.0060.27.

**These SPVs will be replaced with Standard Specification after 2021 Specification is released.**

**A Description**

This special provision describes installing Monotube Arms Special (Length) as shown on the plans and as directed by the Engineer.

**B Materials**

Conform to the pertinent requirements of subsection 657.2 of the standard specifications and as shown on the plans.

**C Construction**

Conform to the pertinent requirements of subsection 657.3 of standard specifications and as shown on the plans.

**D Measurement**

The Department will measure Monotube Arms Special (Length) as each individual arms installed and acceptably completed.

**E Payment**

The Department will pay for the measured quantities at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.26 | Monotube Arms Special 35-FT (Bid Item 657.0536) | EACH |
| SPV.0060.27 | Monotube Arms Special 40-FT (Bid Item 657.0541) | EACH |

Payment is full compensation for installing all materials, including all associated hardware, fittings, mounting devices, and attachments necessary to completely install the arms.

1. Luminaire Arms Steel Special 6-FT, Item SPV.0060.28.

**A Description**

This special provision describes installing Luminaire Arms Steel Special 6-FT as shown on the plans and as directed by the Engineer.

**B Materials**

Conform to the pertinent requirements of subsection 657.2 of the standard specifications and as shown on the plans.

**C Construction**

Conform to the pertinent requirements of subsection 657.3 of standard specifications and as shown on the plans.

**D Measurement**

The Department will measure Luminaire Arms Steel Special 6-FT as each individual pole and arms installed and acceptably completed.

**E Payment**

The Department will pay for the measured quantities at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.28 | Luminaire Arms Steel Special 6-FT | EACH |

Payment is full compensation for installing all materials, including all associated hardware, fittings, mounting devices, and attachments necessary to completely install the luminaire arms.

1. Salvaging and Resetting Planter Pole Assembly, Item SPV.0060.029

**A Description**

This special provision describes removing and resetting planter pole assembly to the pole from their concrete bases and reinstalling them onto new concrete bases as shown on the plans and as hereinafter provided.

**B (Vacant)**

**C Construction**

Remove, handle, store, and transport existing planter pole assembly in a manner that prevents damage to them. If the contractor damages the planter poles through their own operations, then the contractor shall replace them at no expense to the department.

**D Measurement**

The department will measure Salvaging and Resetting Planter Pole Assembly as each individual salvaging and relocating planter pole assembly acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.029 | Salvaging and Relocating Planter Pole Assembly | EACH |

Payment is full compensation for relocating light poles; including all fixtures; for all required modifications to existing wire and conduit as shown on the plans; for all excavating, backfilling, stockpiling, disposing of surplus material and for cleaning out and restoring the work site.

1. Relocating Overhead Speed Sign and Support, Item SPV.0060.30

**A Description**

This special provision describes relocating overhead speed sign and signal head assembly and signal control switch from existing light poles and reinstalling them onto new light poles where shown on the plans and as hereinafter provided.

**B (Vacant)**

**C Construction**

Remove, handle, store, and transport existing overhead speed sign and signal head assembly and signal control switch in a manner that prevents damage to them. If the contractor damages the sign and signal head assembly through their own operations, then the contractor shall replace them at no expense to the department.

The relocated items shall be mounted at the same height as the existing installation.

**D Measurement**

The department will measure Relocating Overhead Speed Sign and Support as each individual relocating overhead speed sign and support acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.30 | Relocating Overhead Sign and Support | EACH |

Payment is full compensation for relocating overhead sign and signal head assembly and signal control switch; connecting electrical circuit to them; providing wiring between the signal control switch and each signal head to match existing installation and maintain existing operation; any hardware required to install sign and signal head assembly and signal control switch to new light pole; and for disposing of surplus material.

1. Luminaires Utility LED 139 Watts, Item SPV.0060.31

**A Description**

Perform work in accordance with the applicable provisions of section 659 of the standard specifications and as detailed on the plans.

**B Material**

Furnish light fixture with LED lamping.

Fixture shall be equipped with full cutoff, Type II segmented optics as shown on the plans.

LED lamping shall have a color temperature rating of 5700 degrees Kelvin; ±400K.

LED driver shall have an operating temperature rating of ‑40°F to 105°F.

Fixture shall be LEDway Street Light model STR‑LWY‑2M‑HT‑08‑E‑UL‑SV‑525 as manufactured by Cree, or equal.

Provide mounting hardware as required to mount LED light fixture on light pole arms. All mounting hardware shall be stainless steel.

**C (Vacant)**

**D (Vacant)**

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.31 | Luminaires Utility LED 139 Watts | EACH |

Payment will be in accordance with subsection 659.5 of the standard specifications.

1. Luminaires Utility LED 66 Watts, Item SPV.0060.32

**A Description**

Perform work in accordance with the applicable provisions of section 659 of the standard specifications and as detailed on the plans.

**B Material**

Furnish light fixture with LED lamping.

Fixture shall be equipped with full cutoff, Type II segmented optics as shown on the plans.

LED lamping shall have a color temperature rating of 5700 degrees Kelvin; ±400K.

LED driver shall have an operating temperature rating of ‑40°F to 105°F.

Fixture shall be LEDway Street Light model STR‑LWY‑2M‑HT‑04‑E‑UL‑SV‑525 as manufactured by Cree, or equal.

Provide mounting hardware as required to mount LED light fixture on light pole arms. All mounting hardware shall be stainless steel.

**C (Vacant)**

**D (Vacant)**

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.32 | Luminaires Utility LED 66 Watts | EACH |

Payment will be in accordance with subsection 659.5 of the standard specifications.

1. Decorative Lighting Arm and Fixture Unit, Item SPV.0060.33.

**A Description**

This special provision describes furnishing and installing decorative lighting arm fixture unit on signal poles.

**B Materials**

Decorative lighting arm and fixture assembly shall be as shown on the plans and as specified herein. The decorative lighting arm and fixture shall be as manufactured by Holophane Lighting, Inc., Model; WLC48/1CABKH; ESL2 P30S 50K AS BK TG 3 S; WLLF/200‑CA/BK. Fixture voltage and accessories shall be coordinated with the City of Racine’s personnel. Holophane Lighting is locally represented by Steve Cotey at (262) 783‑4100. Holophane Luminaire: Esplanade Utility Teardrop LED, 118 watt system, 5K, AutoSensing, 120‑277 Volt, Black Finish, Asymmetric Teardrop Type 3 Prismatic Glass. Arm: West Liberty 48-inch roadway arm with pendant adaptor for single luminaire, West Liberty decorative cast aluminum, black leveling arm fitter with 2-inch slip‑fit connection. Additionally, provide a
3-inch diameter by 9-inch tall post-top tenon on top of the signal pole for mounting the decretive lighting arm. All finishes shall be standard Holophane black.

**C Construction**

The lighting unit shall be assembled and installed per the manufacturer’s instructions. Install unit with proper luminaire orientation and as indicated on the plans.

**D Measurement**

The department will measure Arm‑Mounted Decorative Lighting Unit as each individual unit, acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid items:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.33 | Decorative Lighting Arm and Fixture Unit | EACH |

Payment is full compensation for providing and installing all materials including hardware, fittings, mounting devices, and attachments necessary to completely install the decorative lighting arm and fixture assembly on signal poles.

1. Sealing Manhole Openings, Item SPV.0060.34.

**A  Description**

This special provision describes sealing openings within an existing storm sewer manhole after removing existing storm sewer pipe(s) connected to it.

Perform the work in accordance to the applicable provisions of sections 204 and 611 of the standard specifications, and as hereinafter provided.

**B  (Vacant)**

**C  Construction**

Thoroughly clean the opening on the storm sewer structure after removing the storm sewer pipes and seal them with brick, concrete block, or any grade of concrete specified under subsection 611.1 of the standard specifications.

**D  Measurement**

The department will measure Sealing Manhole Openings as each individual manhole acceptably completed.

**E  Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.34 | Sealing Manhole Openings | Each |

Payment is full compensation for providing all materials and for cleaning out.

1. Marking Contrast Epoxy 4-inch, Item SPV.0090.01

**A Description**

This special provision describes applying contrast epoxy marking conforming to standard spec 646, as the plans show, and as follows.

**B Materials**

Furnish epoxy pavement marking materials conforming of standard spec 646.2.

**C Construction**

Apply two 1 1/2-inch wide black epoxy lines with a 4-inch separation between the two black lines for the first pass, followed by a 4-inch wide white epoxy line second pass, for a total width of 7 inches. Apply epoxy pavement marking conforming to standard spec 646.3.

**D Measurement**

The department will measure Marking Contrast Epoxy 4-Inch Special by the linear foot acceptably completed, measured once as the length of the centerline of the completed installation.

**E Payment**

The department will pay for measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0090.01 | Marking Contrast Epoxy 4-Inch | LF |

Payment is full compensation for providing replacement marking.

SER-646-001 (20180131) 2-13-18

1. Marking Contrast Epoxy 8-inch, Item SPV.0090.02

**A Description**

This special provision describes applying contrast epoxy marking conforming to standard spec 646, as the plans show, and as follows.

**B Materials**

Furnish epoxy pavement marking materials conforming of standard spec 646.2.

**C Construction**

Apply two 1 ½-inch wide black epoxy lines with a 8-inch separation between the two black lines for the first pass, followed by an 8-inch wide white epoxy line second pass, for a total width of 11 inches. Apply epoxy pavement marking conforming to standard spec 646.3.

**D Measurement**

The department will measure Marking Contrast Epoxy 8-Inch Special by the linear foot acceptably completed, measured once as the length of the centerline of the completed installation.

**E Payment**

The department will pay for measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0090.02 | Marking Contrast Epoxy 8-Inch | LF |

Payment is full compensation for providing replacement marking.

SER-646-002 (20180131) 2-13-18

1. Remove Traffic Signals Walgreens Driveway, Item SPV.0105.01; Ohio Street, Item SPV.0105.02; Lathrop Avenue, Item SPV.0105.03; Hayes Avenue, Item SPV.0105.04; West Boulevard, Item SPV.0105.05.

**A Description**

This special provision describes removing existing traffic signals at the intersection of STH 20 and Walgreens Driveway, STH 20 and Ohio Street, STH 20 and Lathrop Avenue, STH 20 and Hayes Avenue, and STH 20 and West Boulevard in accordance to the pertinent provisions of section 204 of the standard specifications and as hereinafter provided. Specific removal items are noted in the plans.

**B (Vacant)**

**C Construction**

Arrange for the de‑energizing of the traffic signals with the local electrical utility after receiving approval from the engineer that the existing traffic signals can be removed.

Contact Ara Molitor, City of Racine, at (262) 636‑9487 at least five working days prior to the removal of the traffic signals. Complete the removal work as soon as possible following shut down of this equipment.

The department assumes that all equipment is in good condition and in working order prior to the contractor’s removal operation. Prior to removal, inspect and provide a list of any damaged or non‑working traffic signal equipment to the engineer. Any equipment not identified as damaged or not working, prior to removal, will be replaced by the contractor at no cost to the department.

Remove all standards and poles per plan from their concrete footings and disassemble out of traffic. Remove the transformer bases from each pole. Remove the signal heads, emergency vehicle preemption heads (evp), mast arms, luminaires, wiring/cabling, and traffic signal mounting devices from each signal standard, arm or pole. Ensure that all access hand hole doors and all associated hardware remain intact. Dispose of the underground signal cable, internal wires and street lighting cable off the state right of way. Deliver the remaining materials to 1415 Hampden Place, Racine WI 53403. Contact Ara Molitor, City of Racine, at (262) 636‑9487 at least five working days prior to delivery to make arrangements.

Remove the signal cabinet from the footing. The signal cabinet and associated signal cabinet equipment shall be delivered Deliver to 1415 Hampden Place, Racine WI 53403. Contact Ara Molitor, City of Racine, at (262) 636‑9487 at least five working days prior to delivery to make arrangements.

Remove and dispose of detector lead‑in cable including loop wire for abandoned loops off the right of way.

**D Measurement**

The department will measure Remove Traffic Signals as a single lump sum unit of work for each intersection acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0105.01 | Remove Traffic Signals Walgreens Driveway | LS |
| SPV.0105.02 | Remove Traffic Signals Ohio Street | LS |
| SPV.0105.03 | Remove Traffic Signals Lathrop Avenue | LS |
| SPV.0105.04 | Remove Traffic Signals Hayes Avenue | LS |
| SPV.0105.05 | Remove Traffic Signals West Boulevard | LS |

Payment is full compensation for removing, disassembling traffic signals, scrapping of some materials, disposing of scrap material, for delivering the requested materials to the department, and incidentals necessary to complete the contract work.

1. Video Detection System Perry Avenue, Item SPV.0105.06; Ohio Street, Item SPV.0105.07; Lathrop Avenue, Item SPV.0105.08; Hayes Avenue, Item SPV.0105.09; West Boulevard, Item SPV.0105.10.

**A Description**

This specification sets forth the minimum requirements for a system that detects vehicles on a roadway using only video images of vehicle traffic.

**B Materials**

**B.1 System Hardware**

The video detection system shall consist of one to six video cameras, a video detection processor (VDP) capable of processing from one to six video sources, and a pointing device.

**B.2 System Software**

The system shall include software that detects vehicles in multiple lanes using only the video image. Detection zones shall be defined using only an on board video menu and a pointing device to place the zones on a video image. Up to 144 detection zones shall be available. A separate computer shall not be required to program the detection zones.

**B.3 Functional Capabilities**

The VDP shall process video from up to 6 video sources simultaneously. The sources can be video cameras or S-VHS video tape players. The video shall be input to the VDP in RS170 format and shall be digitized and analyzed in real time. A separate microprocessor, for each video input, shall be used.

The VDP shall detect the presence of vehicles in up to 24 detection zones per camera. A detection zone shall be approximately the width and length of one car.

Detection zones shall be programmed via an on board menu displayed 9” video color monitor and a pointing device connected to the VDP. The menu shall facilitate placement of the detection zones quickly and easily. A separate computer shall not be required for programming detection zones.

The VDP shall store up to three different detection zone patterns. The VDP can switch to any one of the three different detection patterns within 1 second of user request via menu selection with the pointing device.

The VDP shall detect vehicles in real time as they travel across each detection zone.

The VDP shall have a communications port to an external computer. The VDP port shall be multi-drop capable.

The VDP shall accept new detection patterns from an external computer through the port when the external computer uses the correct communications protocol for downloading detection patterns.

The VDP shall send its detection patterns to an external computer through the port when requested when the external computer uses the correct communications protocol for uploading detection patterns.

**B.4 Vehicle Detection**

Up to 144 detection zones shall be supported and each detection zone can be sized to suit the site and the desired vehicle detection region.

Detection zones shall be capable of being Or’ed or ANDed together to indicate vehicle presence on a single detector output channel.

Placement of detection zones shall be done by using only a pointing device, and a graphical interface built into the VDP and displayed on a video monitor, to draw the detection zones on the video image from each video camera. No separate computer shall be required to program the detection zones.

Up to three detection zone patterns shall be saved for each camera within the VDP memory and this memory shall prevent loss during power outages or camera knock downs.

The selection of the detection zone pattern for current use shall be done through a menu. It shall be possible to activate a detection zone pattern from VDP memory and have that detection zone pattern available within 1 second of activation.

When a vehicle is detected crossing a detection zone, the corners of the detection zone will flash on the video overlay display to confirm the detection of the vehicle.

Detection shall be at least 98 percent accurate in good weather conditions, with slight degradation possible under adverse weather conditions (e.g. rain, snow, or fog) which reduce visibility. Detection accuracy is dependent upon camera placement, camera quality and detection zone location, and these accuracy levels do not include allowances for occlusion or poor video due to camera location or quality. See section 5.12 for recommended camera placement.

The VDP shall provide 32 channels of detection through either a NEMA TS1 port or a NEMA TS2 port.

The VDP shall provide dynamic zone reconfiguration (DZR). DZR enables normal operation of existing detection zones when one zone is being added or modified during the setup process. The VDP shall output a constant call on any detector channel corresponding to a zone being modified.

Detection zones shall be directional to reduce false detections from objects traveling in directions other than the desired direction of travel in the detection area.

Detection zone setup shall not require site specific information such as latitude and longitude to be entered into the system.

Detection zone setup shall not require temporal information such as date and time.

The VDP shall process the video input from each camera using a separate microprocessor at 30 frames per second.

The VDP shall output a constant call for each enabled detector output channel if a loss of video signal occurs. The VDP shall output a constant call during the background learning period.

**B.5 VDP Hardware**

The VDP shall be housed in a durable metal enclosure suitable for shelf mounting or 19-inch rack mounting in a roadside traffic equipment cabinet. The VDP enclosure shall not exceed 7-inch height, 17.75-inch width, and 10.5-inch depth. The VDP shall be modular in construction with plug in field replaceable units (FRU’s) to minimize trouble shooting and repair time.

The VDP shall operate satisfactorily in a temperature range from –34 °C to +74 °C and a humidity range from 0 percent RH to 95 percent RH, non-condensing as set forth in NEMA specifications.

The VDP shall be powered by 120 VAC 60 Hz single-phase power. Surge ratings shall be as set forth in NEMA specifications. Power consumption shall not exceed 135 watts.

The VDP shall include an RS232 port for serial communications with a remote computer. The VDP RS232 port shall be multi-drop capable. This port shall be a 9 pin female "D" subminiature connector on the front of the VDP.

The VDP shall include ports for transmitting TS1 and TS2 detections to a traffic controller. The TS1 port shall be a 37 pin female “D” connector on the front of the VDP. The TS2 port shall be a 15 pin female “D” connector on the front of the VDP.

The front of the VDP shall include up to six BNC video input connections suitable for RS170 video inputs. Each video input shall include a switch selectable 75-ohm or high impedance termination to allow camera video to be routed to other devices, as well as input to the VDP for vehicle detection.

The front of the VDP shall include one BNC video output. Any one of the six video inputs shall be switch selectable for output on this BNC connection via the pointing device at the VDP, or through software and a personal computer connected through the RS-232 multi-drop port via a full duplex modem link.

The video inputs to the VDP shall include transient voltage suppression and isolation. Amplification that shall assure the 1-volt peak to peak video signal integrity is maintained despite video cabling losses and externally induced transients. The amplifier shall have a minimum common mode rejection at 60 Hz of 90 dB.

The VDP enclosure shall include provisions to be bonded to a good earth ground.

The front face of the VDP shall contain indications, such as LED displays, to enable the user to view real time detections for up to 8 detector output channels at a time.

**B.6 Camera**

The video cameras used for traffic detection shall be furnished by the VDPsupplier and shall be qualified by the supplier to ensure proper system operation.

The camera shall produce a useable video image of the bodies of vehicles under all roadway lighting conditions, regardless of time of day. The minimum range of scene luminance over which the camera shall produce a useable video image shall be the minimum range from nighttime to daytime, but not less than the range 0.1 lux to 10,000 lux.

The camera shall use a CCD sensing element and shall output monochrome video with resolution of not less than 380 lines vertical and 380 lines horizontal.

The camera shall include an electronic shutter control lens. The camera shall include a variable focal length lens with variable focus that can be adjusted, without opening up the camera housing, to suit the site geometry. A single camera configuration shall be used for all approaches in order to minimize the setup time and spares required by the user.

The camera electronics shall include AGC to produce a satisfactory image at night.

The camera shall be housed in a weather-tight sealed enclosure. The housing shall be adjustable to allow proper alignment between the camera and the traveled road surface.

The camera enclosure shall be equipped with a sun shield. The sunshield shall include a provision for water diversion to prevent water from flowing in the camera's field of view. The camera enclosure with sunshield shall be less than 5-inch diameter, less than 14-inch long, and shall weigh less than 5 pounds when the camera and lens are mounted inside the enclosure.

The camera enclosure shall include a thermostatically controlled heater to assure proper operation of the lens shutterat low temperatures and prevent moisture condensation on the optical faceplate of the enclosure.

When mounted outdoors in the enclosure, the camera shall operate satisfactorily in a temperature range from –34°C to +60°C and a humidity range from 0 percent RH to 100 percent RH.

The camera shall be powered by 120 VAC 60 Hz. Power consumption shall be 15 watts or less under all conditions.

Recommended camera placement heightshall be 33 feet (or 10 meters) above the roadway, and over the traveled way on which vehicles are to be detected. For optimum detection the camera should be centered above the traveled roadway. The camera shall view approaching vehicles at a distance not to exceed 350 feet for reliable detection (height to distance ratio of 10:100). Camera placement and field of view (FOV) shall be unobstructed and as noted in the installation documentation provided by the supplier.

The camera enclosure shall be equipped with separate, weather-tight connections for power and video cables at the rear of the enclosure. These connections may also allow diagnostic testing and viewing of video at the camera while the camera is installed on a mast arm or pole using a lens adjustment module (LAM) suppliedby the VDP supplier. Video and power shall not be connected within the same connector.

The video signal output by the camera shall be color in RS170 or CCIR format. The video signal shall be fully isolated from the camera enclosure and power cabling.

**B.7 Installation**

The coaxial cable to be used between the camera and the *VDP* in the traffic cabinet shall be Belden 8281 or a 75 ohm, precision video cable with 20 gauge solid bare copper conductor (9.9 ohms/M), solid polyethylene insulating dielectric, 98 percent (min) tinned copper double‑braided shield and black polyethylene outer covering. The signal attenuation shall not exceed 0.78 dB per 100 feet at 10 MHz. Nominal outside diameter is 0.304 inches. The coax cable shall be a continuous unbroken run from the camera to the VDP. This cable shall be suitable for installation in conduit or overhead with appropriate span wire. 75‑ohm BNC plug connectors should be used at both the Camera and Cabinet ends.

The supplier of the video detection system shall approve the coaxial cable, BNC connector, and crimping tool, and the manufacturer's instructions must be followed to ensure proper connection.

The power cabling shall be 16 AWG three conductor cable. The cabling shall comply with the National Electric Code, as well as local electrical codes.

The video detection system shall be installed by supplier factory certified installers and as recommended by the supplier and documented in installation materials provided by the supplier.

**B.8 Warranty**

During the warranty period, technical support shall be available from the supplier via telephone within 4 hours of the time a call is made by a user, and this support shall be available from factory-certified personnel or factory-certified installers.

During the warranty period, updates to VDP software shall be available from the supplier without charge.

**B.9 Maintenance and Support**

The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the video detection system. These parts shall be available for delivery within 30 days of placement of an acceptable order at the supplier's then current pricing and terms of sale.

The supplier shall maintain an ongoing program of technical support for the video detection system. This technical support shall be available via telephone, or via personnel sent to the installation site upon placement of an acceptable order at the supplier's then current pricing and terms of sale for on- site technical support services. Installation or training support shall be provided by a factory authorized representative.

**C Construction**

Install equipment as shown on the plans and as specified in this special provision.

**D Measurement**

The department will measure Video Detection System (location) as a single lump sum unit of work for each intersection acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0105.06 | Video Detection System Perry Avenue | LS |
| SPV.0105.07 | Video Detection System Ohio Street | LS |
| SPV.0105.08 | Video Detection System Lathrop Avenue | LS |
| SPV.0105.09 | Video Detection System Hayes Avenue | LS |
| SPV.0105.10 | Video Detection System West Boulevard | LS |

Payment is full compensation for furnishing and installing hardware, fasteners, cameras, cabling, mounting brackets, making all necessary connections, and testing and setting up the system.

1. Microwave Detection System Perry Avenue, Item SPV.0105.11; Ohio Street, Item SPV.0105.12; Lathrop Avenue, Item SPV.0105.13; Hayes Avenue, Item SPV.0105.14; West Boulevard, Item SPV.0105.15.

**A Description**

Work under this item shall consist of furnishing and installing a microwave detection system that shall detect trucks, vehicles, motor cycles and bicycles and send a signal representative of a loop type detector in a presence mode to a traffic controller device. The sensor shall be easily installed and shall set up as shown on the plans and as hereinafter provided.

The sensor shall operate in the field under the effects of weather (rain, snow, fog), sun rays, night problems and head light glare.

**B Materials**

**B.1 Environmental/Power Requirements**

1. The sensor shall function in the field without any degradation of operation with the following temperature ranges: -40°C to +85°C.
2. The sensor plus interface board shall operate with 24DVC supplied to the TCIB interface card and require no other power supplies. Total current shall be no more than 415mA at anytime during operation with no output active.
3. Operation shall be within 20 seconds from a cold start up. Full operation shall be no greater than 2 minutes, and provide for full automatic recovery from a power failure.
4. The sensor unit shall be FCC approved.

**B.2 Physical Description**

The sensor shall weigh no more than 5.5 pounds, and be no more than 11 inches long, 8.5 inches wide and 7 inches high.

**B.3 Operation**

1. The sensor shall be a microwave-based motion and presence sensor used for intersection control. The sensor shall interface with a traffic signal control cabinet, and shall output signals when vehicles are represent in user defined zones. These zones shall be able to be created by using an X-Y coordinate system, and have the operation verified and optimized using a laptop with Internet Explorer TM 6.0 or greater as part of the installation process or resident on the PC.
2. The sensor shall allow the user to create up to eight (8) zones and assign vehicle presence in each of these zones and up to four (4) outputs to the control cabinet. Detection zones shall be able to be created to a maximum distance of 300 feet from the sensor location.
3. The sensor shall track the presence of a vehicle in a detection zone for a predetermined time, user selectable from 0 to 960 seconds.
4. The sensor shall be able to track multiple moving and stationary vehicles simultaneously.
5. Each vehicle shall be tracked using its X-Y coordinates to determine the vehicles location.
6. The sensor shall update the X-Y coordinates 20 times per second.
7. The range of operation shall be from 50 feet to 400 feet from the front of the sensor.
8. The sensor shall be able to program eight (8) independent zones, and provide up to four independent optical isolated outputs to the controller cabinet inputs via one of three optional sensor interface boards.
9. The sensor shall be able to determine and display the speed of each vehicle in the detection zones.
10. The sensor shall be able to provide grid tracking for the live interactive zones.
11. The sensor shall be able to provide a histogram to verify setup of the zones.
12. The sensor interface shall use either English (standard) or metric units at the option of the user.
13. The sensor shall be able to provide user defined delay and/or extension times for each zone.
14. The sensor Explorer interface shall be able to provide a graphical representation of the vehicle track as they approach the intersection.
15. The sensor shall provide a diagnostic and demonstration mode for various operations.
16. The sensor shall operate via an Ethernet interface with power supplied over the Ethernet connector (POE).

**B.4 MOUNTING**

1. The sensor shall be mounted on the monotube arm or on the side of a pole at a minimum height from 14 feet for stop bar detection and a minimum height of 17 feet for advanced detection for optimal performance.
2. When mounted on the side of the pole a maximum 30 degree offset from the traffic direction shall be allowed to provide for optimal operation.
3. Mounting hardware shall be supplied with each sensor to allow the device to be attached to a pole with standard stainless steel strapping bands.

**B.5 RADAR**

1. The sensor shall support five (5) selectable channels of microwave operation and operate in the FSK-4 mode. 24.075 GHz, 24.100 GHz, 24.125 GHz, 24.150 GHz, 25.175 GHz.
2. The beam angle shall be an Azimuth of 25 degrees to 100 feet, and then 20 degrees out to 400 feet. The elevation shall be 12 degrees.

**B.6 INTERFACE BOARDS**

1. Interface boards shall be available for the sensor and shall be compatible with NEMA TS-1 and TS-2, 170, 179 and 2070 cabinets. For each sensor one interface board shall be required per specifications.
2. The Interface board shall communicate with the controller cabinet. The interface boards shall meet with the requirements of CALTRANS 170/2070 222 and 224 modules with respect to size and form.
3. There shall be three optional interface boards available with the following functions:
4. There shall be four (4) output Interface Boards that fits in a single input file slot.
5. The interface boards shall operate at 24DVC and provide the power supply for the sensor over the Ethernet cable.
6. The Interface boards shall have up to four (4) LED’s to indicate the activity of each zone. (Only 2 LEDs are active on the 2 channel board).
7. Each output shall be optically isolated with a LED and status indicator.
8. There shall be an indication for a fault mode (no Ethernet connection) such that all LEDs and Opto-isolator are on. This action shall place calls on the traffic controller.
9. There shall be an RS-232 port for diagnostics on each Interface boards.
10. The Interface boards shall provide power and short circuit protection for the sensor.
11. The Interface board shall automatically recover from a power failure and start up within 20 seconds of a cold start.
12. The Interface board shall be hot swappable and shall be able to be plugged in and out of the input file slot without adversely effecting its operation. (Unplugging of the Interface board shall take power off the Interface board and off the sensor).

**C Construction**

Install equipment as shown on the plans and as specified in this special provision.

**D Measurement**

The department will measure Microwave Detection System (Location) as a single lump sum unit of work for each intersection acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0105.11 | Microwave Detection System Perry Avenue | LS |
| SPV.0105.12 | Microwave Detection System Ohio Street | LS |
| SPV.0105.13 | Microwave Detection System Lathrop Avenue | LS |
| SPV.0105.14 | Microwave Detection System Hayes Avenue | LS |
| SPV.0105.15 | Microwave Detection System West Boulevard | LS |

Payment is full compensation for furnishing and installing hardware, fasteners, cameras, cabling, mounting brackets, making all necessary connections, and testing and setting up the system.

1. Emergency Vehicle Preemption System Perry Avenue, Item SPV.0105.16; Ohio Street, Item SPV.0105.17; Lathrop Avenue, Item SPV.0105.18; Hayes Avenue, Item SPV.0105.19; West Boulevard, Item SPV.0105.20.

**A Description**

This SPV is place holder only, it will be completed after we get information from City’s Fire Chief.

**B Materials**

**C Construction**

**D Measurement**

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0105.16 | Emergency Vehicle Preemption System Perry Avenue | LS |
| SPV.0105.17 | Emergency Vehicle Preemption System Ohio Street | LS |
| SPV.0105.18 | Emergency Vehicle Preemption System Lathrop Avenue | LS |
| SPV.0105.19 | Emergency Vehicle Preemption System Hayes Avenue | LS |
| SPV.0105.20 | Emergency Vehicle Preemption System West Boulevard | LS |

Payment is full compensation for furnishing and installing hardware, fasteners, cameras, cabling, mounting brackets, making all necessary connections, and testing and setting up the system.

1. Relocating Stone Monument, The World’s War, Item SPV.0105.21; Peder Back Plaza, Item SPV.0105.22.

**A Description**

This special provision describes removing and relocating stone monuments from existing location to new location shown of the plan.

**B (Vacant)**

**C Construction**

Remove monuments from the existing location, clean and store, and reinstall them in the location shown on the plans or as directed by the engineer.

**D Measurement**

The department will measure Relocating Stone Monument as a single lump sum unit of work for each location acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0105.21 | Relocating Stone Monument - The World’s War | LS |
| SPV.0105.22 | Relocating Stone Monument - Peder Back Plaza | LS |

Payment is full compensation for removing, cleaning, storing, transporting, backfilling, restoring the area occupied by the monument, and reinstalling the monuments at the location shown on the plans or as directed by the engineer.

1. Removing and Reinstalling Water Fountain, Item SPV.0105.23.

**A Description**

This special provision describes removing and reinstalling water fountain located in Peder Back Plaza.

**B (Vacant)**

**C Construction**

Remove fountain from the existing location, clean and store, and reinstall at the same location or as directed by the engineer.

**D Measurement**

The department will measure Removing and Reinstalling Water Fountain as a single lump sum unit of work acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0105.23 | Removing and Reinstalling Water Fountain | LS |

Payment is full compensation for removing, cleaning, storing, transporting, adjusting water connection as needed, and reinstalling the water fountain at the existing location or as directed by the engineer.

1. Concrete Sidewalk Thickened Edge, Item SPV.0165.01.

**A Description**

Perform work in accordance with the applicable provisions of section 504 of the standard specifications and as detailed in the plans.

**B (Vacant)**

**C (Vacant)**

**D Measurement**

The department will measure Concrete Sidewalk Thickened Edge by the square foot acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0165.01 | Concrete Sidewalk Thickened Edge | SF |

Payment is full compensation for providing all materials, including all concrete and steel reinforcement; for all excavating, for backfilling, disposing of surplus material, and for cleaning out and restoring the work site.

1. Remove and Replace Brick Pavers, Item SPV.0165.02.

**A Description**

This special provision describes removing and installing existing brick pavers on a base aggregate dense base and sand setting bed. The base aggregate dense base shall be per the pertinent provision of section 305 of the standard specifications.

**B Materials**

Salvaged brick pavers.

Granular material base course in accordance to section 350 of the standard specifications.

Leveling Course shall be natural sand or sand manufactured from crushed rock and conform to the grading requirements of ASTM C 33 as shown below.

Leveling Course Grading Requirements:

| ASTM C33 |
| --- |
| Sieve Size | Percent Passing |
| 9.5 mm | 100 |
| 4.75 mm | 95 to 100 |
| 2.36 mm | 85 to 100 |
| 1.18 mm | 50 to 85 |
| 600 um | 25 to 60 |
| 300 um | 10 to 30 |
| 150 um | 2 to 10 |

Joint Sand shall be clean, non‑plastic, and free from deleterious or foreign matter. The sand shall be natural or manufactured from crushed rock and shall conform to the grading requirements of ASTM C 144 as shown below:

Joint Sand Grading Requirements

| ASTM C 144 |
| --- |
|  | Natural Sand | Manufactured Sand |
| Sieve Size | Percent Passing | Percent Passing |
| 4.75 mm | 100 | 100 |
| 2.36 mm | 95 to 100 | 95 to 100 |
| 1.18 mm | 70 to 100 | 70 to 100 |
| 600 um | 40 to 75 | 40 to 75 |
| 300 um | 10 to 35 | 20 to 40 |
| 150 um | 2 to 15 | 10 to 25 |
| 75 um | 0 | 0 to 10 |

**C Construction**

Install geotextile over base aggregate dense base surface and wrap up edges one inch. Spread levelingcourse evenly and screed. Set pavers high enough to allow for settlingthat will occur during final compaction. The screeded leveling course shall not bedisturbed. Place sufficient leveling course in order to stay ahead of the laid pavers. Donot use leveling course to fill depressions in the base surface. Pavers shall be free offoreign material before installation. Lay the pavers in the patterns that matches with the existing pattern and make adjustments allow for whole paver use as often as possible. Maintainstraight pattern lines. Joints between the pavers shall be between 1/16 inch and 5/32 inchwide. Pavers shall be cut with a double blade paver splitter or masonry saw.

Sweep the paver surface clean of all debris before compacting, in order to avoid damagefrom point loads. Use low amplitude, high frequency plate compactor with compactiveeffort of 3000 lbs. to compact the pavers into the leveling course. Compact the pavers andsweep dry joint sand and joint sand stabilizer additive into the joints according tomanufacturer’s recommendations. All work to within 3 feet of the laying fact mustbe left fully compacted with sand‑filled joints at the completion of each day.

**D Measurement**

The department will measure Remove and replace Brick Pavers by square foot acceptably completed.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0165.02 | Remove and Replace Brick Pavers | SF |

Payment is full compensation for removing pavers from the area shown on plans, furnishing all incidental materials, including granular (sand) leveling course material, geotextile, joint sand and additive, cleaning and storing removed pavers, installing, and finishing. The department will pay for base aggregate dense separately.

1. Management of Solid Waste, Item SPV.0195.01.

**A General**

**A.1 Description**

This work will conform with the requirements of Section 205 of the Standard Specifications; to pertinent parts of the Wisconsin Administrative Code, Chapters NR 700-736 Environmental Investigation and Remediation of Environmental Contamination; Wisconsin Administration Code, Chapters NR 500-538, Solid Waste; and as shown on the plans and as supplemented herein.

Foundry sand will be encountered within the construction limits. The solid waste may contain NR 500 non-exempt industrial wastes including soil mixed with foundry sand. Impacted waste material excavated during construction which cannot in the opinion of the environmental consultant be managed as common excavation or as petroleum-contaminated soil will be managed as solid waste.

This work consists of excavating, segregating, temporary stockpiling, loading, hauling, and disposing of solid waste material at a WDNR-approved disposal facility. The nearest WDNR-approved disposal facilities are:

Republic Services Kestrel Hawk Landfill

1989 Oakes Rd.

Racine, WI 53406

(262) 884-7081

Waste Management Pheasant Run RDF Landfill

10712 South 124th Street

Bristol, WI 53104

(800) 963-4776

Advanced Disposal Emerald Park Landfill

W124S10629 South 124th Street

Muskego, WI 53150

(414) 529-1360

Provide information to the environmental consultant and engineer that indicates the WDNR‑approved disposal facility that the contractor will use.

**A.2 Notice to the Contractor-Solid Waste Locations**

The department and others completed hazardous materials assessment for locations within this project where excavation is required. Investigation for soil contamination was conducted at select locations. Results indicate that solid waste (foundry sand) is present at the following location as shown on the plans:

* Station 125+00 to 127+00, from reference line to project limits right, from approximately 1 to 2 feet bgs. Foundry sand is present at this location. Approximately 271 cubic yards (approximately 461 tons at an estimated 1.7 tons per cubic yard) of solid waste soil will be excavated from this area.

Directly load solid waste soil excavated by the project at the above location into trucks that will transport the material to a WDNR-licensed landfill facility for landfill disposal.

If obviously contaminated soils or signs of NR 500 non-exempt solid waste and hazardous materials are unexpectedly encountered elsewhere on the project, terminate excavation activities in the area and notify the engineer. Examples of these unexpected conditions may include, but are not limited to, buried containers or tanks, noxious odors and fumes, stained soils, sheen on ground water, other industrial wastes, and significant volumes of municipal or domestic garbage.

No active groundwater monitoring wells were observed within the construction limits. If active groundwater monitoring wells are encountered during construction, notify engineer and protect them to maintain their integrity. The environmental consultant will determine if monitoring wells need to be maintained. For monitoring wells that do need to be maintained, adjust the wells that do not conflict with structures or curb and gutter to be flush with the final grade. For wells that conflict with the previously mentioned items or if monitoring wells are not required to be maintained, they will be abandoned by others.

If dewatering is required at the above location, conduct the dewatering in accordance with Section C below.

**A.3 Excavation Management Plan Approval**

The excavation management plan for this project has been designed to minimize the off-site disposal of contaminated waste. The excavation management plan, including these special provisions, has been developed in cooperation with the WDNR. The WDNR concurrence letter is on file at the Wisconsin Department of Transportation. For further information regarding previous investigation and remediation activities in these areas contact:

Name: Andrew Malsom

Address: 141 NW Barstow Street, Waukesha, WI 53187-0798

Phone: 262-548-6705

Fax: 262-548-6891

e-mail: andrew.malsom@dot.state.wi.us

**A.4 Coordination**

Coordinate work under this contract with the environment consultant:

Consultant: TRC Environmental Corporation

Address: 150 N. Patrick Blvd. Ste. 180, Brookfield, WI 53045

Contact: Bryan Bergmann

Phone: 262-901-2126

Fax: 262-879-1220

E-mail: bbergmann@trcsolutions.com

The role of the environmental consultant will be limited to:

1. Determining the location and limits of solid waste to be excavated based on soil analytical results from previous investigations, visual observations, and field screening of soil that is excavated;
2. Identifying soils to be hauled to the landfill facility;
3. Documenting that activities associated with management of solid waste are in conformance with the solid waste management methods for this project as specified herein; and
4. Obtaining the necessary approvals for disposal of solid waste from the landfill facility.

Provide at least a 14-calendar day notice of the preconstruction conference date to the environmental consultant. At the preconstruction conference, provide a schedule for all excavation activities in the area of solid waste fill described in A.2 to the environmental consultant. Identify the WDNR licensed landfill facility that will be used for disposal of solid waste, and provide this information to the environmental consultant no later than 30 calendar days prior to commencement of excavation in the impacted area or at the preconstruction conference, whichever comes first. The environmental consultant will be responsible for obtaining the necessary approvals from the landfill facility for disposal of the solid waste.

Coordinate with the environmental consultant to ensure that the environmental consultant is present during excavation in the impacted area. Notify the environmental consultant at least three calendar days prior to commencement of excavation in the impacted area. Perform excavation in the impacted area on a continuous basis until excavation work is completed. Do not transport soil containing solid waste offsite without prior approval from the environmental consultant.

**A.5 Health and Safety Requirements**

*Supplement subsection 107.1 of the standard specifications with the following:*

During excavation activities, expect to encounter historic fill contaminated with industrial waste (foundry sand) and associated regulated metals and organic compounds. Site workers taking part in activities that will result in the reasonable probability of exposure to safety and health hazards associated with hazardous materials shall have completed health and safety training that meets the Occupational Safety and Health Administration (OSHA) requirements for Hazardous Waste Operations and Emergency Response (HAZWOPER), as provided in 29 CFR 1910.120.

Prepare a site-specific Health and Safety Plan, and develop, delineate and enforce the health and safety exclusion zones for each impacted area as required by 29 CFR 1910.120. Submit the site-specific health and safety plan and written documentation of up-to-date OSHA training to the engineer prior to the start of work.

**B (Vacant)**

**C Construction**

Subsection 205.3 of the standard specification is supplemented with the following:

Control operations in the impacted area to minimize the quantity of soil excavated.

The environmental consultant will periodically monitor soil excavated from the area identified in A.2 above. The environmental consultant will evaluate excavated soil based on field screening results, visual observations, and soil analytical results from previous environmental investigations. Assist the environmental consultant in collecting soil samples for evaluation using excavation equipment. The sampling frequency shall be a maximum of one sample for every 20 cubic yards excavated.

Directly load and haul solid waste soil designated by the environmental consultant for offsite disposal to the WDNR approved landfill facility. Use loading and hauling practices that are appropriate to prevent any spills or releases of the material. Prior to transport, sufficiently dewater soils designated for off-site disposal so as not to contain free liquids.

Verify that the vehicles used to transport material are licensed for such activity in accordance with applicable state and federal regulations. Obtain the necessary disposal facility approvals and WDNR approvals for disposal. Do not transport regulated solid waste off-site without obtaining the approval of the environmental consultant and engineer and notifying the disposal facility.

During excavations in the areas of known contamination, larger chunks of clean concrete (approximately 2 cubic feet), asphalt and bricks shall be segregated from the fill, to the extent practical and managed as common excavation. Under NR 500.08 this material is exempt from licensing and requirements of Wisconsin Administrative Code NR 500-538 of the solid waste regulations, and will be reused as designated by the engineer as fill on the project, or it will be disposed of off-site at the contractor’s disposal site(s).

If dewatering is required in areas of known contamination, water generated from dewatering activities may contain petroleum compounds and/or metals. Such water may require analytical testing, and with approval of the City of Racine Wastewater Utility be discharged to the sanitary sewer as follows:

1. Meet all applicable requirements of the City of Racine Wastewater Utility including the control of suspended solids. Perform all necessary monitoring to document compliance with the City of Racine Wastewater Utility requirements. Furnish, install, operate, maintain, disassemble, and remove treatment equipment necessary to comply with the City of Racine Wastewater Utility requirements.
2. Ensure continuous dewatering and excavation safety at all times. Provide, operate, and maintain adequate pumping equipment and drainage and disposal facilities.

Notify the engineer of any dewatering activities, and obtain any permits necessary to discharge water. Provide copies of such permits to the engineer. Meet any requirements and pay any costs for obtaining and complying with such permit use. Follow all applicable legislative statutes, judiciary decisions, and regulations of the State of Wisconsin.

Costs associated with excavation dewatering in contaminated areas are considered incidental to this pay item. The Wisconsin Department of Transportation will be the generator of regulated solid waste from this construction project.

**D Measurement**

The department will measure Management of Solid Waste by the ton of waste accepted by the disposal facility and as documented by weight tickets.

**E Payment**

The department will pay for the measured quantity at the contract unit price under the following bid item:

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0195.01 | Management of Solid Waste | TON |

Payment is full compensation for excavating, segregating, loading, hauling, and landfill disposal of solid waste; obtaining solid waste collection and transportation service operating licenses; assisting in the collection of soil samples for field evaluation; dewatering of soils prior to transport, if necessary.